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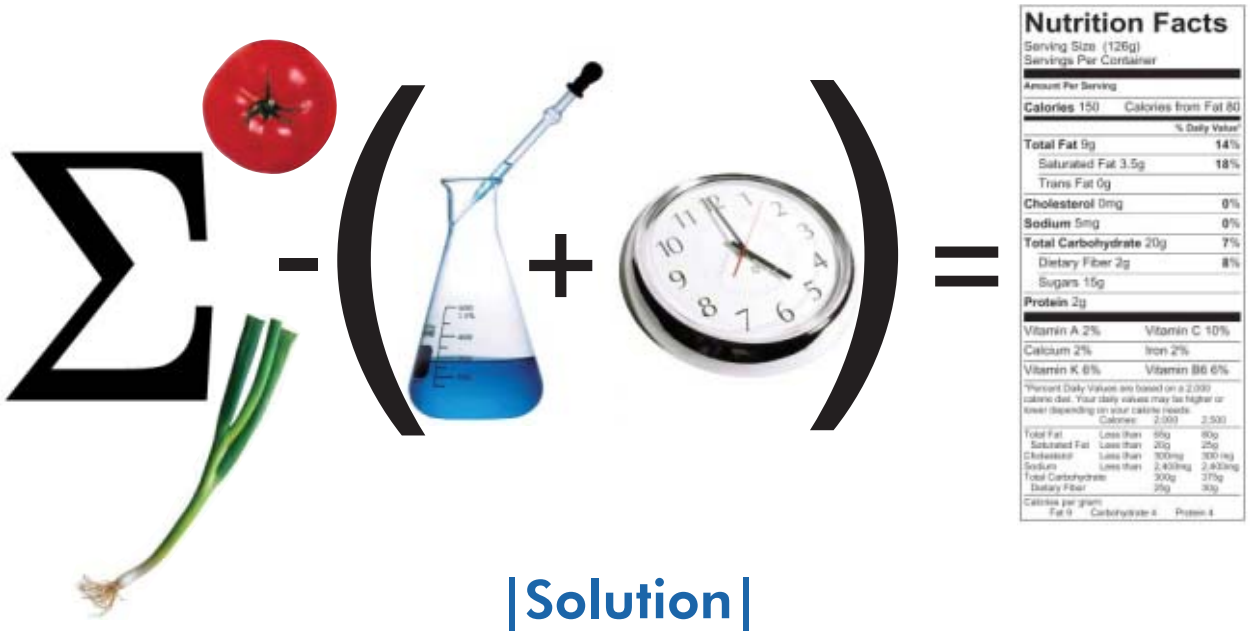
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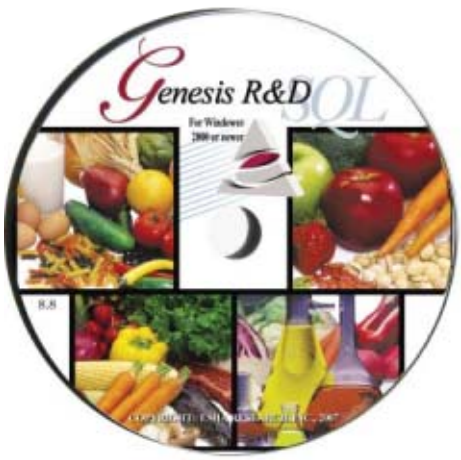
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Hard to Resist



Claudia Dziuk O'Donnell
Chief Editor
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Other than directories, this 220-page issue is the largest since I joined *Prepared Foods* 16 years ago. Our editorial increasingly has focused on ingredient and product development issues, leaving food quality control concerns, such as plant processing, to sister publications. However, having been responsible for QC in food companies and having an over-worked FDA inspector as a close friend, I follow news on ingredient quality and sourcing with interest. Of course, specifying safe ingredients from reliable vendors is crucial for successful product development.

Consumers want natural, great-tasting, convenient and healthy foods with zero safety risk for little cost. Providing food with all these characteristics is more difficult than achieving all three goals often displayed on posters in R&D labs: "Cheap, Fast, Good…choose two."

Companies are pressured to keep ingredient costs down in order to offer foods at competitive prices. However, they also need to provide a profit (since staying in business is a good thing). Thus, processors pressure their ingredient suppliers, who in turn pressure their suppliers for inexpensive materials. However, quality costs. It costs to pay qualified production, quality control and purchasing staffs. It costs to throw out materials that are substandard. It costs to have processing plants in well-maintained buildings while meeting regulatory standards such as environmental compliance.

However, it also costs when quality fails. It costs brands. In an April 2007 Harris Interactive online survey of 2,563 adults, 55% said that they would at least temporarily switch to another brand, and 15% said they would permanently switch if a brand they usually purchased was involved with a recall or safety concern issue. A failure in quality costs whole categories. In the same poll, 17% of respondents that remembered a national recall of chicken in February associated the recall with the wrong brand. Of those who remembered a recent peanut butter recall, 12% attributed it to the wrong company. Failed quality costs nations. Mission Foods and Tyson Foods, among others, have reportedly declared they will no longer source ingredients from China.

I really have no advice and no admonishments for anyone. I've chosen inexpensive options with expensive results a few too many times myself. Even when one suspects a deal to be too good to be true, it can be hard to resist. So, I'll end this column on a more positive note. A hearty "thank you" goes to everyone involved in this healthy issue; readers, advertisers and fellow employees. pf

Hitting the Shelves



A Newfound Treasure

According to Information Resources, white chocolate is the fastest-growing sector within the chocolate category over the past year. This factor has been duly noted by Masterfoods, which has released, for the very first time, white chocolate M&M's candies in the U.S. This treat has been dubbed White Chocolate Pirate Pearls, and it is presented in conjunction with the summer release of the next installment of Disney's *Pirates of the Caribbean* movie. The M&M's carry a custom pearl color blend, including cream, white, light blue and pastel yellow candy shells. To reflect the tone of the movie, the candies also feature pirate images imprinted on them, such as pirate ships and nautical spyglasses. The chocolate treat's packaging showcases the popular M&M's characters donning a selection of pirate costumes alongside Captain Jack Sparrow. Expect the use of white chocolate to continue to grow not only within the confectionary sector, but also in other consumable categories.

First Draught



Joint ventures are quite popular in the packaged goods industry, giving two brands the opportunity to create one exceptional product. Attempting to capitalize on this possibility, Kraft Foods has presented one of its latest co-branded entries—Guinness Bull's-Eye Premium Barbecue Sauce. The new product sees Bull's Eye brand barbecue sauce made with the world-famous Guinness brand draught beer. It blends brown sugar and spices and is said to be ideal for flavoring chicken, ribs and anything else that is grilled. Guinness has also been used in other consumable products in the industry, including bread mixes and savory spreads. Expect this distinct flavor to be used in a variety of other items.

Siding with Veggies



In the global battle for better overall health and wellness, one thing is clear: a balanced diet is essential. According to the U.S. Dietary Guidelines, a healthy plan emphasizes fruits, whole grains, lean meats and vegetables. Many companies are releasing new products that will help support the guidelines; Unilever Bestfoods is doing this with its Knorr Sides Plus collection. The line comprises flavorful rice-and-pasta dishes that deliver two full servings of vegetables per pack. Free of artificial flavors and trans fat, the side dishes are suitable for either microwave or stovetop cooking. Eating these dishes will allow consumers to get nearly half of the recommended amount of vegetables in one meal. The Cheddar Rice variety is a rice-and-pasta blend in a cheddar cheese sauce with broccoli and carrots. It is housed in a flavor-seal pouch.

Wholesome Goodness from Chocolate

While recent antioxidant buzz has focused primarily on fruits such as pomegranate and açai, chocolate is quickly gaining strong notoriety in the antioxidant arena. Hershey's Whole Bean Chocolate Squares highlight the natural flavanol antioxidants found in pure chocolate with natural cocoa. These chocolate squares are made using the whole cocoa bean, and it is a mildly sweet milk chocolate with 40% less sugar than the leading milk chocolate. Also containing 7g of inulin fiber, this chocolate, when consumed moderately, claims to be suitable for consumers who want to reduce sugar and increase fiber. For further education, the packaging features a chart that displays the antioxidant capacity of selected foods, including this whole bean chocolate.





Ethical Products

According to the Mintel Global New Products Database (GNPD), ethical products are those designed to appeal to certain moral or socially acceptable principles which address issues such as employee working conditions, community development, fair trade and environmental sustainability. As indicated in the accompanying chart, the total number of food and beverage products carrying the ethical claim has increased in the U.S. by 73% from Q1 2006 to Q1 2007. An average of 67 ethical products being launched per quarter is indicative of the growth of this particular trend.

Certified fair trade products are committed to providing fair wages and good employment opportunities to economically disadvantaged farmers around the world. While the fair trade market remains fairly small, it continues to expand in terms of product offerings and geographic coverage. In addition, the customer base for fair trade is increasing, with the emergence of a growing number of consumers whose purchasing decisions are shaped by a range of ethical considerations.

Coffee remains the most successful fair trade offering; however, other launches are noted in the confectionery, frozen dessert and soft drink sectors. Steaz Energy Drink from the Healthy Beverage Company, for instance, claims to be the first functional energy drink that is fair trade-certified and organic.

Sustainable packaging (such as compostable packaging and refills) is fully biodegradable and usually made from vegetable extracts. These package types are less harmful to the environment and are primarily popular in the non-food sectors.

However, sustainable packaging is being used more often to package soft drinks, produce, some convenience foods and even tea. All in all, products that have little or no negative impact on the ecosystem and those that "give back" will continue to prosper.

A Matter of Ethics

Food and Beverage Products Carrying an "Ethical" Claim

Q1 2007	93
Q4 2006	53
Q3 2006	113
Q2 2006	52
Q1 2006	26

Source: Mintel Global New Products Database



GlobalTrends

"Purple foods" are a big trend in Japan and some parts of Asia Pacific, where foods of a purple color are marketed and consumed for their high content of anthocyanins, which are the substances responsible for the purple color and known to be powerful antioxidants. This trend has not yet caught on in the rest of the world. However, in Italy, Unilever has released Purple Cream Soup made with red chicory under the Findus That's Amore brand. Red chicory is naturally rich in anthocyanins, and the back of the pack educates consumers about the antioxidants. At the same time, the range is marketed not only on the merit of the ingredients, but based on colors, and an orange and a white variant are also available.

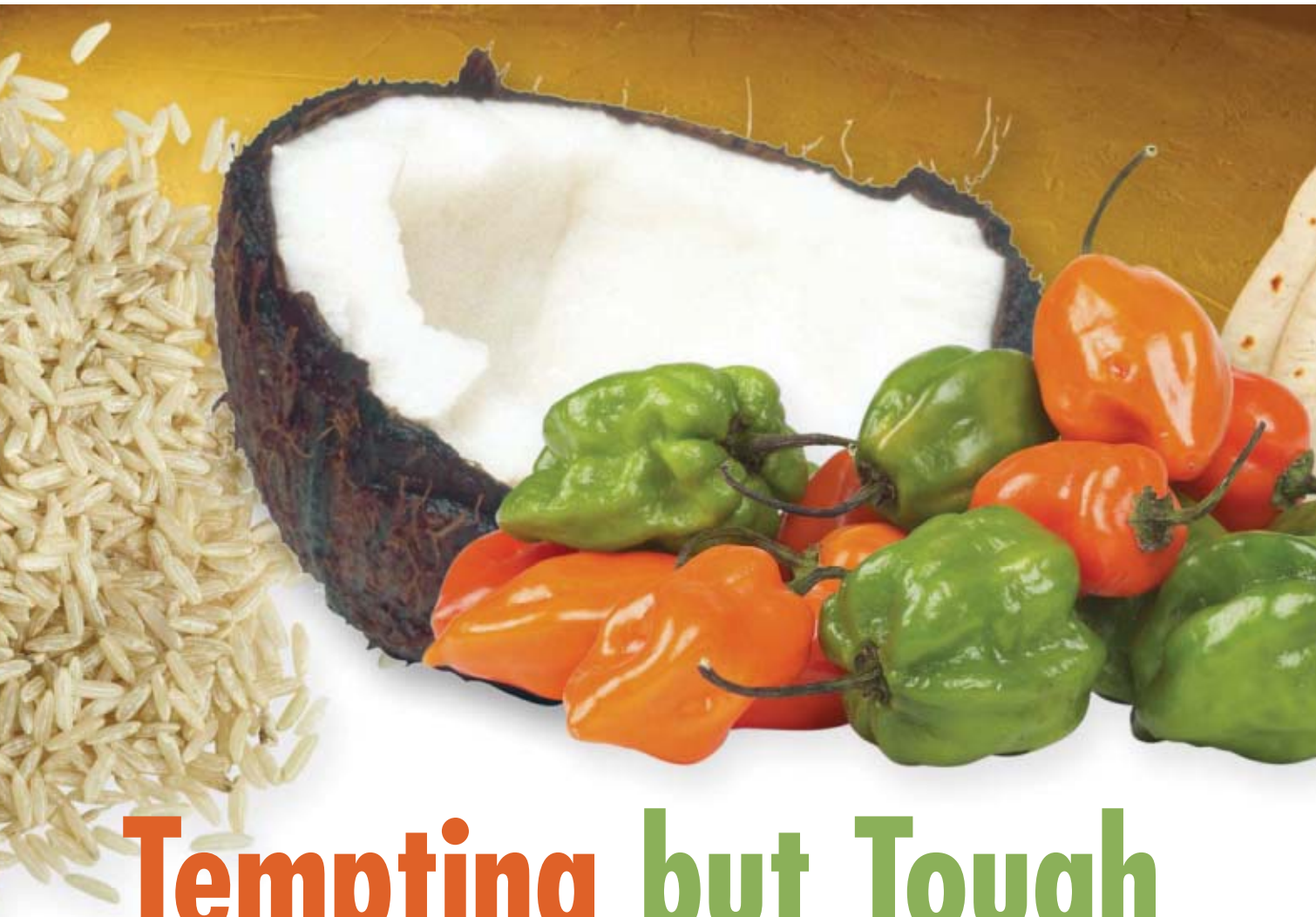
In another area, what results from mixing milk with beer? Bilk! To boost the ever-declining consumption of milk in Hokkaido, the small off-license Nakahara store co-developed Bilk, which is a low malt beer made from 30% milk (from the local community of Nakashibetsu) combined with Abashiri Beer. Launched this February in Japan with a suggested retail price of 380 yen ($3.14), it is currently available only by mail order. The beer was made with technical consulting from Tokyo University of Agriculture. The packaging also features peaceful cows grazing in a field—not exactly common for a category that targets adult crowds. The graphic is clearly in line with the new formulation offered. Milk is an important source of calcium and other vitamins and minerals. Adding it to beer is a new way to help increase milk consumption in the general population, while still allowing consumers to enjoy their favorite leisure beverage.

The purchase power of teenage girls is strong, and many manufacturers continue to develop products that target them. Recently in Sweden, Unilever released Raspberry Ice Cream Lolly with Glitter Make-Up under the Girlie brand. It comprises an 80ml star-shaped raspberry ice cream on a hollow stick containing glitter. The glitter-filled stick doubles as a shiny body makeup for girls. All about accessories and latest trends, teenage girls can snack on an ice cream lolly that will reward them with a new piece of cosmetic paraphernalia to put in their handbag.

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Tempting but Tough

The large and growing North American Hispanic market may be a food marketer's dream, but truly understanding it is essential.

Tom Zind, Contributing Editor

Food marketers who take note of the growing population of Hispanics in North America and their mounting influence on the culture are clearly doing their homework. However, if they are responding simply by dreaming up new dishes with a spicy kick, making tacos and burritos more convenient or coming out with products merely to slap the words "dulce de leche" on them, they might one day find themselves saying "the dog ate my homework."

Growing in number and on track to accelerate as a percentage of the U.S. population in coming years, Hispanics are a distinct and worthy target market for food companies. But far from being a monolithic group that has one set of food tastes and food consumption behaviors, Hispanics are a multi-faceted grouping of peoples who hail from myriad nations, cultures and food traditions. Moreover, their food orientation, like that of other ethnic groups, also is a function of demographics, differing based on such variables as age, income level, family size and degree of acculturation.

Those differences and nuances are being highlighted in a growing number of in-depth studies of the Hispanic market aimed at marketers of many products, including food. In the last year, Technomic Inc. issued "Targeting the Hispanic Foodservice Customer—Keys to Success," and Mintel Inc., unveiled "Hispanic Meals at Home," among others.



Their message: food marketers will increasingly have to work to uncover the secrets to serving the needs and mirroring the habits of a culture anchored in many ways by food—from what is consumed to how it is prepared and how it is purchased. Whether they are focused on developing products unique to the home countries of Hispanic immigrants or simply bringing mainstream foods to those who call themselves Hispanic, successful marketers will need to understand the behaviors of consumers with exacting demands, intense loyalties and, in some cases, entrenched eating habits.

The Technomic study advises mainstream food marketers to better grasp the differences inherent in the many Hispanic subgroups, which can strongly affect food consumption patterns. "When we think Hispanic we think Mexican, but in fact the demographics are much broader than that—we've identified about 11 or so Hispanic subgroups," says David Henkes, senior principal at Technomic. "The trick for food manufacturers and the foodservice industry is to avoid the trap of assuming that Hispanics are one big block of people, and instead to target them with foods and beverages and flavors that are appropriate."

As the study notes, many food marketers are failing to key into differences relating to country of origin, acculturation levels, socioeconomic status and life stage. "These differences are not well understood by foodservice manufacturers and operators. As a consequence, many companies have had limited success in reaching this important market."

A Market That Can't Be Ignored

That is certainly cause for concern, given the number of Hispanics entering cultures notably different from which they or their parents originated. Indeed, from a sheer numbers perspective, the Hispanic market is a tough one to ignore for any food company looking to plan ahead and target products and marketing efforts to fast-growing slices of the population.

According to the Technomic study, there are now some 40 million Hispanics in the U.S.; this comprises about 14% of the population. The Hispanic population is growing four times faster than the U.S. population, putting it on track to potentially account for 25% of the country's total population by 2050.

The Mintel study sees a similar growth track. It predicts that between 2001 and 2011, the share of the U.S. population that is Hispanic is expected to increase from 13% to 15.7%.



It will not be easy to mainstream many authentic Hispanic foods. Some will catch on, some will not and a "hybridization" will happen for many. Bimbo introduced Colchones, a sweet orange flavored bread fortified with vitamins and iron, into the Mexican market in 2006. It can be found in s*upermercados* in the U.S.

Perhaps more important is the fact that the Hispanic population is skewing much younger than the rest of the U.S. population. The Technomic study noted that people under 18 comprise 34% of the Hispanic population, compared with 25% of the non-Hispanic population.

Acculturation: The Key

A central consideration in understanding Hispanics' food consumption behavior and catering to their needs is the impact of the level of acculturation. It is generally believed that recent Hispanic immigrants are more likely to cling to the foods and eating traditions of their home countries or regions. The longer they are in the new environment—as they acculturate—the more likely they will be to adopt more mainstream food consumption behaviors.

"The effect of acculturation on the types of foods Hispanics eat is pronounced—it is perhaps the most important demographic to consider when assessing the Hispanic consumer," notes the Mintel study.

Technomic's assessment is that acculturation levels are such that food marketers may be facing an uphill battle by attempting to pull many Hispanics away from their native foods and eating habits toward mainstream foods. While some 40% of U.S. Hispanics are likely fully acculturated (defined as those born in the U.S. to parents who are U.S. citizens), some 60% are not. Of that 60%, 13% are unacculturated (a group consisting of those who were born outside the country and have lived less than half their lives in the U.S.). But the biggest block (47%) are semi-acculturated, meaning that while they were born outside the country, they have spent more than half their lives within its borders.

Acculturation poses a dilemma and a challenge for a growing number of Hispanics, says Ricardo Lopez, president of Hispanic Research Inc., a marketing research firm. A reluctance to blend into the larger mainstream society is often expressed at least partly through food choices and eating habits.

"Early immigrants to the U.S. forced their children to speak English, but now that's changed—now, it's work to keep your culture," he says. "Hispanics come into this country and they struggle with losing it. One way they may seek to retain it is to put an emphasis on the foods of their culture."

Food Marketers' Dilemma

That begs the question: Should mainstream food marketers promote authentic dishes to meet this desire?

The answer is not an easy one because creating successful authentic dishes is a difficult task. Researching, developing and marketing genuinely Hispanic foods to the various subsets of Hispanic immigrants who favor their own cultural foods is likely a time-consuming effort with no guarantee of a payoff. Many unacculturated or semi-acculturated Hispanics seek out and often find authentic products and brands marketed through specialty grocery stores or online.

On the other hand, a Hispanic population consisting of a larger percentage of young people and large families that treasure food and eating—a market that makes food makers salivate—is clearly growing. Ignoring that group and waiting for it to acculturate to meat loaf and fried chicken probably is not in the genes of most aggressive, growth-oriented food companies.

As Lopez notes, any culture in which food is so central cannot be ignored. "Food is very much a part of the

New Product Nuances



"Hispanic culture revolves around food," says Ricardo Lopez, president, Hispanic Research Inc. Lopez points out that this attitude affects everyone in the food industry and is changing the way America eats. "Latinos come from some 20 different countries, each with a unique food heritage. In addition, Hispanics demand new prepared foods to go with their new American lifestyle." This year at *Prepared Foods*' 25th New Products Conference, October 14-17th, Naples Grand Resort, Naples, Fla., Lopez will present "Understanding *La Comida Latina*," where he will examine Hispanic food attitudes and Latino food needs. For more information, see www.PreparedFoods.com/npc or contact Marge Whalen at whalenm@bnpmedia.com or 630-694-4347.



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Hispanic/Latino culture, and in a sense it defines them; you can't not talk about the food when you talk about the culture," he says.

Marcela Berland, founder and president of LatinInsights, a Latino market research firm, says one of the challenges marketers face in developing culturally accurate Hispanic foods is that there is little room for error. "Hispanics will try products and know immediately whether or not they're authentic," she says. "They're hard to trick."

As acculturation progresses and Hispanics begin spreading their food wings, it may make increasing sense for food marketers to target that market more precisely with prepared foods that speak their language. In addition, as the influence of Hispanics on the culture grows and non-Hispanics look to experiment with a broader range of non-traditional, culturally specific Hispanic foods, a move deeper into Hispanic "cuisines" may be warranted. At the very least, it may make sense to tailor the design, packaging and marketing of mainstream foods or those that have some Hispanic elements to appeal to Hispanic consumers, from the unacculturated to the fully acculturated. Taking Hispanic food design beyond traditional Mexican foods requires an appreciation of the fundamental differences that mark each group's food traditions.

Hispanics Are Not Monolithic

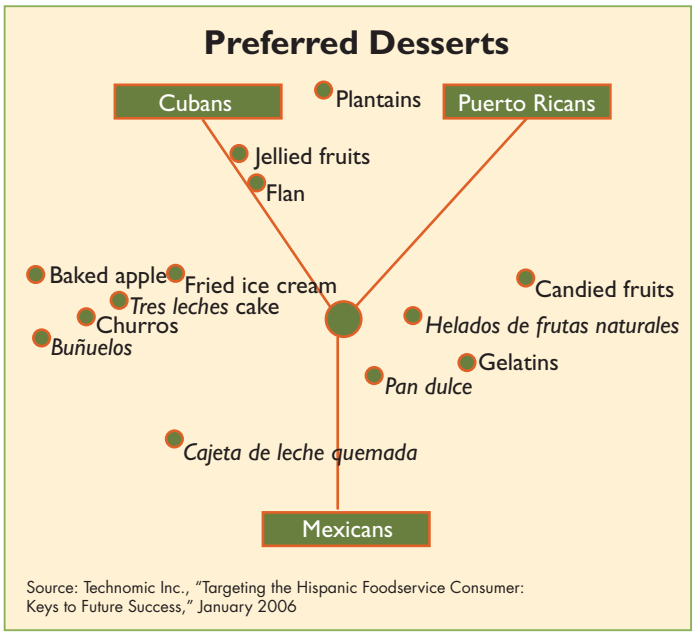
Critical to understanding the Hispanic market and its food preferences is knowing its diverse makeup. Loosely defined as persons from Spanish-speaking regions of the Western Hemisphere—from Mexico to Puerto Rico, Cuba and other Caribbean countries along with the various nations that make up Central America and parts of South America—Hispanics comprise multiple races, ethnicities and nationalities. Customs, mores and traditions that affect what and how people eat differ greatly from group to group.

While there is some overlap in food preferences among Hispanic subgroups, the points of difference are sufficient enough to warn food marketers away from a one-size-fits-all approach to serving the Hispanic market. It is also notable that "hot and spicy" is hardly a characteristic common to all Hispanic foods. "The Hispanic subgroups differ in the food staples they eat, the seasonings and ingredients they use and the ways in which they prepare their food," the Technomic study notes.

In a broad overview of food preferences for four broad Hispanic subgroups, Technomic's study flags notable differences. Mexican foods, for instance, are often flavored with tomato sauces and rich chili pastes. South American foods, though, lean heavily on green peppers, tomatoes, onions, coriander and annato, while Central American dishes use tomatoes and onions, but use chiles sparingly. Caribbean



See Food Master-*INGREDIENTS*, p. 85



Source: Technomic Inc., "Targeting the Hispanic Foodservice Consumer: Keys to Future Success," January 2006

foods are often built around root vegetables like yucca, malanga, yams, okra and black-eyed peas, while raisins, olives, red pimentos, hard-boiled eggs and chocolate are common in Central American dishes.

Technomic Inc.'s report examined dessert preferences. In this chart, indexes were used to determine which desserts appealed to which Hispanic sub-group(s). Items placed closer to the subgroup name appeal more to that particular sub-group(s), while those near the middle appeal similarly to all groups. Thus, for example, "Cubans were more likely to eat flan, jellied fruits and baked apples, while Puerto Ricans are more likely to eat candied fruit."

Differences can even be as subtle as preferences for the beans used in soups, a popular dish. The Technomic study plots favored beans for Cubans, Mexicans and Puerto Ricans. To the exclusion of all other types, Mexican foods employ pinto beans in soups. Cubans like the garbanzo, black, red kidney and lentil; Puerto Ricans favor the *habichuela* and lima.

"You have to understand their special food interests and preferences, and that can come down to knowing whether you should be selling them something as basic as either rice or tortillas," says Susan Mitchell, senior research analyst for Mintel. "And if it's tortillas, if they're not just like the ones they're familiar with they might not want them."



See Food Master-*INGREDIENTS*, p. 99

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See Food Master-*INGREDIENTS*, p. 118-119

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Country of Origin Food Preference Profile

Mexico
- Dishes are often flavored with tomato sauces and rich chili pastes.
- Seafood, poultry and pork are commonly consumed.
- Thin-cut meats are preferred for cooking purposes.
- Stews, molés and braised meats and poultry are common.
- Corn, maize and beans are staples.
- Cinnamon, clove, cilantro, thyme, marjoram and *epazote* are regularly used spices.

Central America
- Tomatoes and onions are used to flavor food; chiles used sparingly.
- Pork, chicken and beef are used in stews or are grilled or roasted.
- Raisins, olives, red pimentos, hard-boiled eggs and chocolate are often-used ingredients.
- Rice, beans and corn are staples.

South America
- Annatto, coriander, onions, tomatoes and green peppers provide flavoring to most dishes.
- Seafood, poultry and pork are preferred.
- Potatoes, corn and rice are staples.

Caribbean
- Seafood, pork and poultry are dominant: roasted, grilled or fried.
- Garlic, coconut milk and adobos provide flavoring.
- Preferred root vegetables include yucca, malanga and yams.
- Okra, black-eyed peas and pigeon peas are common. Flavoring greens (collards, spinach, turnips, etc.) with smoked meats is popular.

Source: Technomic Inc., "Grow in America Chain Store Guide: Top 50 Hispanic Markets Report 2005"; "Targeting the Hispanic Foodservice Consumer: Keys to Future Success," January 2006

Eating Habits Key

Successfully targeting the less acculturated Hispanic market requires more than just figuring out the food itself. It also requires an understanding of how different groups eat and how they purchase and prepare food.

The Mintel study concludes that many Hispanics approach food in many non-traditional, less-than-mainstream ways. The less acculturated, in particular, like to cook meals from scratch and, in turn, favor fresh foods. But among the young and more acculturated, interest is growing in calorie-dense, fast pre-

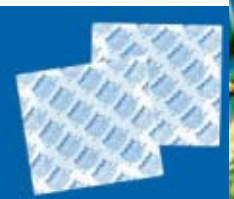
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Acculturation Defined

Unacculturated: Born outside of U.S. and have spent less than half of their life in U.S.; 13% of U.S. Hispanics.

Semi-acculturated: Born outside of U.S. but have spent half or more of their life in U.S., or born in U.S. to immigrant parents; 47% of U.S. Hispanics.

Acculturated: Born in U.S. to parents who were born in U.S.; 40% of U.S. Hispanics.

Source: Technomic Inc., "Targeting the Hispanic Foodservice Consumer: Keys to Future Success," January 2006

pared and frozen foods largely because of time and disposable income pressures, which can weigh inordinately heavily on many Hispanics.

The study also revealed that Hispanics have a lower than average interest in trying new foods and recipes, preferring instead to stick with foods they know. Children, while present in half of Hispanic households compared with 30% of non-Hispanic households, do not exert inordinate influence on family food choices. Also, a sizable number of Hispanics—one-third possibly—rate lunch the most important meal of the day, compared to just 15% of non-Hispanics.

Mainstreaming Hispanic Foods

While Hispanics constitute a large and growing bloc of consumers, they are certainly not the only ones interested in authentic Hispanic foods. "A variety of Latino foods are crossing from one Latino group to another and more are going mainstream, as well," Lopez states. "We're already seeing it with the ascent of fruits like mango, papaya and guava, which weren't anywhere to be found in the U.S. 20 years ago."

But attempts to mainstream many authentic Hispanic foods could well fall flat, especially in the retail prepared foods environment. While some products are catching on, many probably do not contain the seeds of mass appeal. What may happen is hybridization, or the creation of new products from a collection of different Hispanic and "American" food traditions.

"There are ways of taking authentic products that might be perceived as 'niche' and marketing them across different population segments," says Mintel's Mitchell. "But not everything is going to translate."

In the same vein, food marketers would do well to remember that the same applies to attempts to market foods to unacculturated Hispanics, whose numbers are likely to grow. Many simply will not warm to appeals of mainstream food companies. "They're not going to make tacos using a 'kit'," Mitchell observes. Pf



See Food Master-*INGREDIENTS*, p. 3



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See Food Master-*INGREDIENTS*, p. 172

On Campus



The wealth and diversity of Baby Boomers has been the subject of numerous studies. Less exploration has gone into Echo Boomers—or Generation Y. An examination of buying patterns and preferences on college campuses reveals it to be a savvy group with tremendous purchasing power and a strong sense of beliefs.

William A. Roberts, Jr., Business Editor

As the National Association of College & University Food Services (NACUFS) notes, the Echo Boomers (also known as Generation Y) comprise 24% of the U.S. population. This 70 million strong group of individuals between the ages of 10 and 28 represents $625 billion in annual buying power; it is the country's most diverse generation in terms of preferences, culture and ethnic backgrounds. They are well-informed and avoid the notion of trial: if everyone else is doing it, they go straight to adoption. The group, as a whole, is described as individualistic, distrustful and cynical of overt marketing, because they have been branded since birth.

Generation Y has a huge amount of buying power and are forming their opinions about brands and products now. They are well-informed, be it from their parents or through the media, and learn about nutrition and food ingredients more than their predecessors.

In terms of food spending, this generation may well be the foodservice industry's best friend. Generation Y Americans eat out an average of 24 times a month, according to a Technomic survey, spending $1,152 yearly on restaurant food purchases. They select fast food restaurants more than 80% of the time; however, that is not to say that their purchases are necessarily unhealthy: their consumption of salads is on the increase.

More than 10% of the group goes to gourmet coffee shops three times a week or more, according to the Technomic survey. Averaging 4.6 cups per day, Generation Y is the fastest-growing specialty coffee consumer segment, largely helping to propel blended coffees into a $1 billion industry.

As Janet Paul Rice, associate director of dining services at Concordia College, finds, "College students are spending money now, developing habits. They are forming opinions, if they haven't already, about brands and companies. Their concerns and questions are more prevalent now, and they are much better informed, be it from parents or through media or their learning process. They are better informed about nutrition and food ingredients. Things like allergies are much more known."

Taught Well

"What college students are eating today is what they were educated to eat, to what their tastes were educated to when they were younger. You get a broad range, with some wanting organic, home-grown, fresh, not modified. However, a couple of things are at play: one is the educational process and a much stronger awareness at an earlier age as to what is available regarding variety, freshness, quality, additives and what is 'good for you' and not. Plus, at the earlier ages, you have a much stronger parental influence," explains Lance Thornton, director of dining/food services at The Principia. In his role, Thornton has experience dealing with a variety of

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See Food Master-*INGREDIENTS*, p. 111

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school-age groups, considering The Principia has 525 students in its pre-kindergarten through 12th grade levels, as well as another 550 in its four-year liberal arts college.

"The minute we start talking about college, you get a different standpoint. The term 'Freshman 10 or 15 or 20' is absolutely true. (The term refers to the amount of weight freshmen students are likely to gain during their first year on campus.) I have seen students look totally different after just a few months. They are not accustomed to anyone controlling or not controlling what they eat and how they eat and their patterns and when and where. Some of it might be metabolism changing, but much of it has to do with their newfound freedom," says Thornton.

Researchers at the University of New Hampshire (UNH) found this freedom might be leading to unhealthy students. As part of its Young Adult Health Risk Screening Initiative, UNH surveyed nearly 800 college students between 18 and 25. Nearly half of the male students were overweight or obese, as were almost 30% of the female students. According to the survey, the men ate about 2,700 calories a day, with women consuming roughly 1,800. More than half the men and 20% of the women had high blood pressure.

Students are attempting to counteract these health and weight issues in different, sometimes dangerous ways. The March issue of *Nutrition Journal* found 83% of college women were dieting, regardless of their weight. Making matters worse, these women are often using unhealthy methods such as skipping breakfast or suppressing appetites by smoking. As Lisa Jahns, a professor in the nutrition department at the University of Tennessee at Knoxville notes, "It's a period of dietary transition. In many ways, students are learning to feed themselves."

Universities are responding with a variety of approaches. Duke University offers an interactive nutrition workshop for freshmen with eating problems. Included are tips for quick and healthy meals in the dorm, as well as advice on how to make correct food choices in an all-you-care-to-eat dining hall.

Generation Y is the fastest-growing specialty coffee consumer segment, largely helping to propel blended coffees into a $1 billion industry.

Other institutions are attacking the problem by eliminating unhealthy aspects from their menu offerings. Recently, Texas A&M University eliminated trans fats from all 30 campus eateries, which range from cafeteria-style dining halls, restaurants and food court specialties to snacks and coffee bars. Meanwhile, campus food provider Sodexho has switched to oils and shortenings that have no trans fat.

Brand Aware

Students attending larger schools will find no lack of recognizable options. Subway, Burger King, Jamba Juice and Starbucks are all popular fixtures on college campuses. Leslie Bowman, director of contract administration for University of Minnesota's dining services, explains, "Students in high school, part of their entertainment dollars are spent on food at the mall or going out to chain restaurants. The expectation is that they are going to see the brands they know and love on campus."

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38%	$1 million - $5 million
25%	<$1 million
19%	$5 million - $10 million
18%	>$10 million

Source: NACUFS

However, some of the fastest-growing brands on campus are smaller-scale outfits throwing their hats into the $4.6 billion college foodservice industry. Chick-fil-A, well-established in the Southeast, can now be found on campuses ranging from The College of William & Mary to NYU. Even regional concepts can be found in colleges, providing a local flavor for students who are thinking local in a number of ways.

Sustainable foods—items grown locally with ecologically sensitive methods—are something of a rage on campus, as are organic products. Estimates say roughly half of the nation's 15 million college students have access to some organic food on campus, even if it is at some expense. In the 2004-05 school year, Yale's annual food costs were about $4.6 million. The following year, sustainable and organic foods increased the school's costs to just under $5.6 million, according to the school's financial and administration services. While 40% of the food served on campus is organic, the ultimate goal is to serve 100% sustainable and organic food, envisions Thomas Peterlik, director of Yale's Culinary Resource Center. He says the school is swallowing the added costs, as the budget for student food has increased to $2.94 per meal from the $2.10 it was two years ago.

The purchasing power of members of the National Association of College & University Food Services (NACUFS) is greater than $1.7 billion yearly.

In all likelihood, the students would pay that premium. Thornton cites his experience when he first began stocking Odwalla as an example. "They are higher priced," he explains, "but a great product. Many of my colleagues looked at me and said, 'You're crazy. The students will never buy that.' I put in a whole cooler, a huge space in a fairly small area, and we couldn't keep it full. Great product, great packaging, not a long shelflife, but I don't have to worry about it: it's not on the shelf long enough for that to be a concern, even at that premium price."



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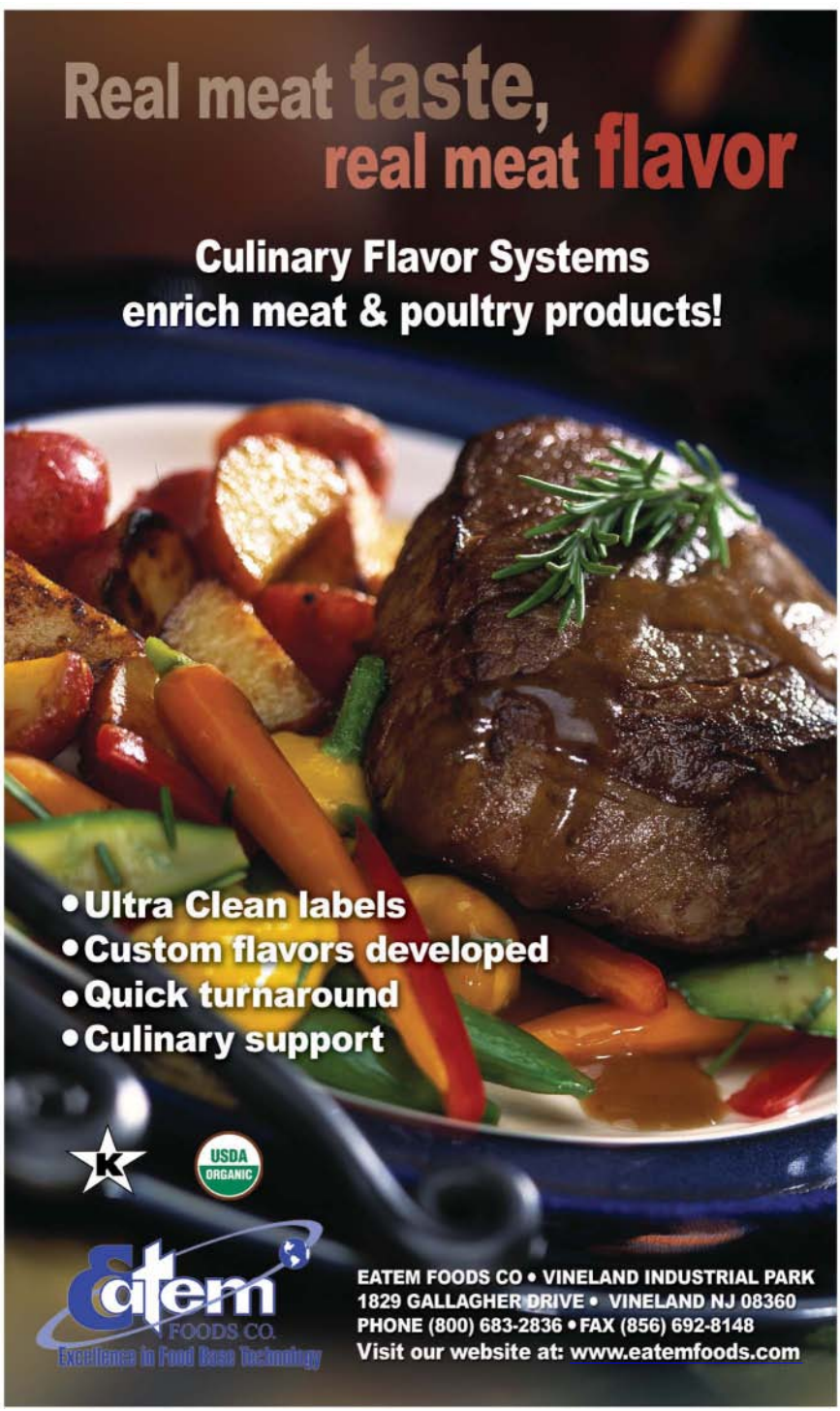
The Option Play

"Gen Y customers want lots of options," Thornton finds. "There is a very strong desire for ethnic items—and for authentic ethnic. Among younger students, it is more simplistic. The desired options increase as the grades progress."

To offer the students the variety and options they crave, The Principia allows students a degree of customization. "We have a night where we have Asian cuisine, and the students can put together in any combination they want," says Thornton. "We try to pick authentic and have brought Cuban and Mexican recipes in, as well as some Cajun cuisine. That is another thing that students really seem to be looking for. They are really coming in with higher expectations, even at younger ages, where they want authentic ethnic cuisine."

How are colleges and universities responding to these demands? A recent survey by *FoodService Director* found 25% of campus dining services employing at least one executive chef. As Thornton notes, "That's how a lot of colleges and universities are working through the trends we are dealing with and the requests we are getting for authentic ethnic cuisine and organic items and other menu challenges." The Principia employs both an executive chef and a pastry chef. "It impresses the students and actually the faculty quite a bit," he explains.

That impression can go a long way. Rice cites a situation at Concordia immediately after the school hired its executive chef: "Just after chef Jim joined us (in January





College life has proven to be a time of dietary transition for Generation Y. While many have opted for healthy, organic and/or sustainable food options, others have proven less able or willing to control the urge for junk food.

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Diverse Universe

Population of Generation Y by Race

Non-Hispanic white	61%
Hispanic	17%
Black	16%
Asian	5%

Source: *The Millennials;* Bureau of Census, 2000

of 2006), while he was still getting his bearings and learning about the college foodservice market, and before we had changed anything yet, there were already comments that the food was so much better since he joined the staff. There was a positive perception change."

How can manufacturers assist campus dining directors and attract Generation Y? "The student wants hot, fresh and now, with lots of variety. Then, they want it quick and ready to go right now and want to be able to leave with it," Thornton explains. "Everybody is so much on the go. While almost contradictory, it is another indication that everybody wants it their way when they want it that way. We're actually moving toward adding more grab-and-go space in our operations and looking for packaged products to be attractive, convenient, to sell themselves with great marketing and lots of information. It's a matter of changing perceptions. So that a packaged product can be perceived as fresh, organic, without preservatives or additives and with natural sweeteners: that's the direction all our customers are going." Talk about a homework assignment! PF

Generation Y comprises 70 million individuals, represents $625 billion in annual buying power and is the country's most diverse generation in terms of preferences, culture and ethnic backgrounds.

Website Resources:

http://eatingdisorders.mc.duke.edu — Duke University's Eating Disorders Program

www.missouri.edu/wrcwww — University of Missouri-Columbia's Wellness Resource Center

www.farmtocollege.org — Community Food Security Coalition

www.collegeeatingguide.com — *College Student's Guide to Eating Well on Campus*

www.campusblues.com/healthy_eating.asp — Healthy eating during college

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Compleat Thinking

A number of shelf-stable, microwaveable meal introductions have come and gone over the years. Some have met with success, but others have fallen by the wayside—the casualties of overblown consumer expectations or the simple inability to deliver on the promises of taste and/or convenience. Nevertheless, the microwave meal segment is sizable: $452 million and increasing at double-digit rates, according to Nielsen Scantrack Data. A segment of that size seemingly would be well-served, but that is not the case, according to Brett Asay, brand manager with Hormel Foods: Asay notes an underserved but growing category niche in speedy, portable and satiating meals. In response, Hormel is reintroducing a concept under the new name Hormel Compleats. The 20-item line, formerly known as Hormel Microwave Trays, is entirely shelf-stable and has tripled in sales over the past three years. It registers as the fastest-growing product in the company's consumer product division.

Hard Water



Bottled water has been among the hottest segments of the beverage category in recent years, with near double-digit volume increases over the past six years, according to Beverage Marketing Corporation. As that group noted in its 2006 report on the market, "The category is growing…forcefully on a global scale, but in the U.S., volume is unparalleled." Americans consumed 26.1 gallons per person in 2005, drinking more bottled water annually than any beverage other than carbonated soft drinks, and more recent statistics say that gap has closed considerably.

So, with that level of market penetration, where else can water go? Diageo North America, for its part, is taking spring water into decidedly more adult territory. The company's Smirnoff Source is a premium malt beverage combining pure spring water with a malt-based alcohol. Available currently in the Northeast, the 3.5% alcohol by volume (ABV) beverage has fewer calories and a lower ABV than most popular domestic beers.



Sweet Release

Consumers are increasingly concerned about the amount of sugar in their diets, and parents in particular have been finding low-sugar alternatives to children's favorite beverages. According to a Nestle Nesquik survey, six out of 10 moms are concerned about the amount of sugar in their children's diets. As a response, Nestle has announced its Nesquik Powder has 25% less sugar than other powder and syrup brands, promising to be a way for moms to encourage kids to drink more milk. However, reduced-sugar options are not solely the domain of child-oriented products. In fact, one recent launch couples that feature with one of the most popular ingredients in recent years: antioxidant-rich pomegranate. Old Orchard Brands has expanded its Healthy Balance line of low-sugar fruit juice cocktails with the introduction of Healthy Balance Pomegranate. It claims 75% less sugar, carbohydrates and calories than leading pomegranate juices.

Halal Demand

Advertising agency JWT is predicting the market for halal foods will grow substantially. According to Marian Salzman, JWT executive vice president, the global halal food market is worth $580 billion annually.

"As it grows, we envision aisles in the supermarket dedicated to halal foods, in much the same way as kosher and ethnic foods, such as Indian and Spanish, do today," Salzman forecasts. "To be truly global, food marketers have to cater to the Muslim population. There are significant opportunities for major marketers to build relationships with them, especially in the areas of prepared, convenience and pre-packaged halal meals."

The agency's study found 44% of Muslims agreeing with the statement, "Most products and brands do not understand my needs." pf

Who's Counting?

With the concerns about the obesity and overweight rates in the country, it is no surprise that Americans are dieting; however, the number of consumers who claim to be on some form of diet may be an eye-opener. Further surprising could well be the fact that the vast majority have no idea how many calories they should consumer per day. The second annual Food & Health Survey conducted by the International Food Information Council (IFIC) Foundation finds 56% of Americans are trying to lose weight. The survey likewise reports nine of 10 consumers do not know how many calories they should consume in a day.

The survey regards the results as one of six "diet disconnects" among the 1,000 American adults questioned. The seemingly contradictory notions include:

- Some 70% of those trying to improve the healthiness of their diet are doing so to lose weight, yet only 11% know the number of calories they should consume per day.
- 84% are physically active for health benefits at least once a week; however, 44% of those who are physically active do not "balance diet and physical activity" to manage weight.
- Breakfast is important to 90% of Americans, but only 49% eat the morning meal every day.
- The types and amounts of fats in Americans' diets are up from a year ago (72% versus 66%), with less trans fats being eaten; however, consumers are not sure which fats are healthy: for example, respondents are trying to consume less polyunsaturated fats, which are regarded as beneficial to health.
- More than 70% of consumers are trying to eat more carbs like fiber and whole grains. On the other hand, more than 50% remain concerned about the amount of carbs they consume.
- According to respondents, functional foods can benefit heart health (80%), improve digestive health (76%) and improve physical energy or stamina (76%). Unfortunately, more than 50% of Americans say they do not currently consume foods or beverages that convey those benefits.

For a copy of the entire survey, visit www.ific.org/research/foodandhealthsurvey.cfm.

Changes for the Better?

Specific Changes Consumers Have Made to Improve the Healthiness of their Diet in the Past Six Months

	2007	2006
Consuming more of a specific type of food or beverage	36%	23%
Consuming less of a specific type of food or beverage	29%	21%
Physical activity	23%	15%
Changing eating habits	19%	18%
Change the amount of fat	13%	14%
Limiting portion sizes	11%	12%
Change the amount of sugars	8%	17%
Eating less of a certain food component	7%	3%
Change the amount of carbs	5%	11%
Following a specific diet plan	5%	3%
Eating more of a certain food component (vitamin, mineral, nutrient)	4%	10%
Skipping meals, eating smaller meals	4%	9%
Eating fewer calories	4%	2%
Change the type of fat	2%	1%
Mention of trans fat	2%	-
Change the type of carbs	1%	2%
Change the type of sugars	1%	0%
Other	5%	2%
Not taking any steps	1%	1%

2007: n=660 2006: n=574
Source: Food & Health Survey conducted by the International Food Information Council (IFIC) Foundation





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new product trends

market watch



THE IN BOX:

For daily industry news updates, see the homepage of www.PreparedFoods.com and www.NutraSolutions.com.

■ The board of directors of David Michael & Co. announced the hirings of John Kling as production superintendent; Yuko Noda as processed flavors chemist; Sonia Ortiz in the Technical Department as a flavor lab technician; GuoYing Yang as food technologist; Li Ying as quality control manager; Lucy Tian as manager of sales and marketing; Li Hong as food technologist with David Michael Beijing; and Ixel Castillo in the Quality Control area of David Michael de Mexico.

■ ORAFTI Active Food Ingredients appointed Tim Van der Schraelen as marketing & communication manager, as well as Dominic Speleers and Charles Degard as managing directors.

■ D.D. Williamson hired Sandra Nelson as technical coordinator, D.D. Williamson (U.K.) Ltd.

■ Cargill Specialty Canola Oil signed a long-term lease to open a specialty canola research farm in Aberdeen, Saskatchewan.

■ LycoRed Ltd. appointed Sochim International SpA as its strategic partner for the sale of the LycoRed product line into the Italian dietary supplement market. Also, the company named Udi Alroy as vice president of global marketing and sales.

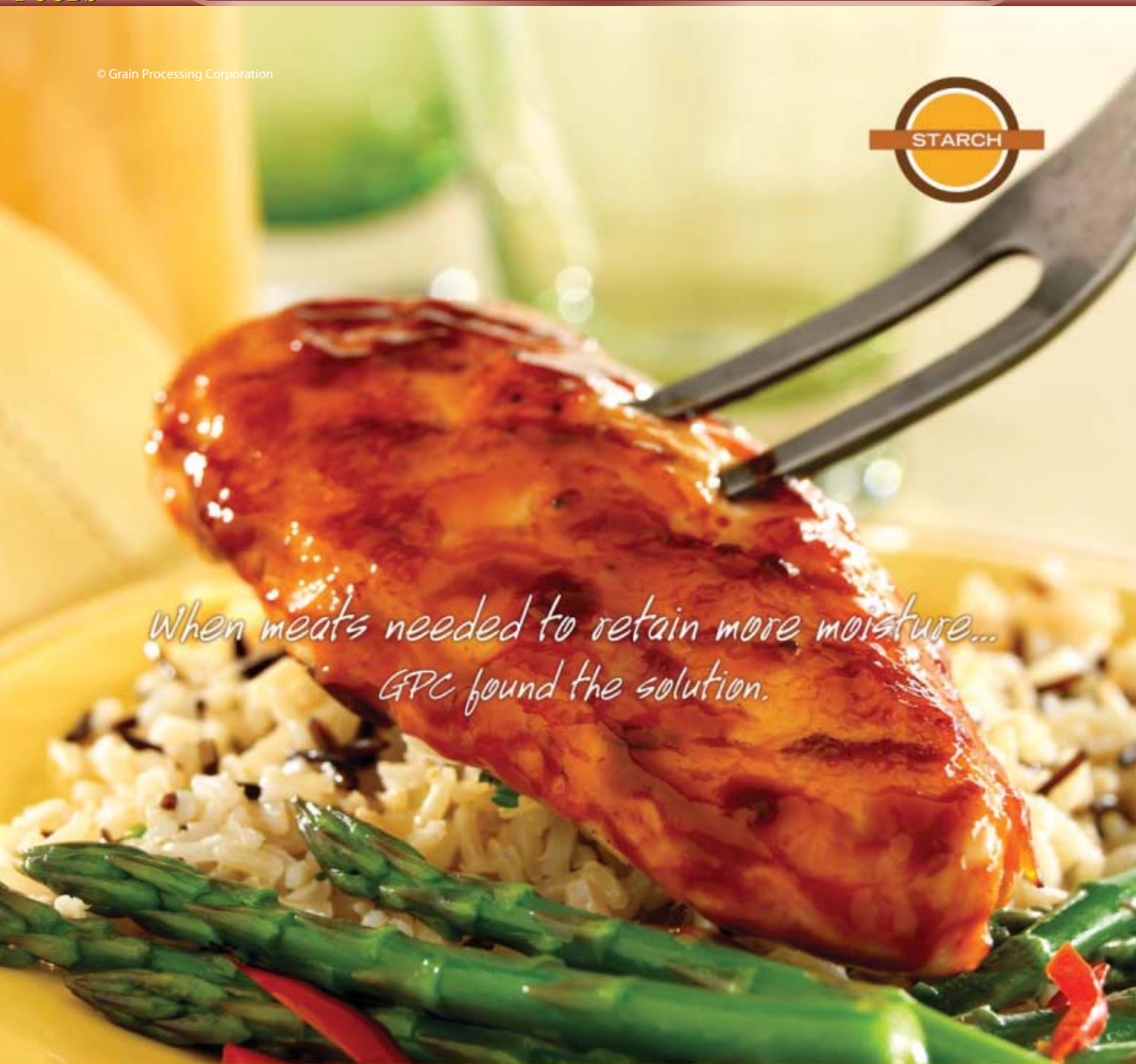
■ TIC Gums recently completed an audit from the Islamic Food and Nutrition Council of America (IFANCA) and the company's manufacturing plant is now halal-certified.

■ A group of investors led by FITE (First Israeli Turnaround Enterprise) Mivtach Shamir Group and Ori Yehudai acquired a controlling interest in Solbar Industries Ltd.

■ E. Ray Murphy has joined Casa de Oro Foods LLC as CEO.

■ GELITA AG elected Christoph Kirsch, Günther Niethammer, Jörg Siebert and Konstanze Koepff-Röhrs to its supervisory board.

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Updating "Organic"

Mark S. Hostetler, Blackwell Sanders LLP



In the Federal Register, 72 F.R. 27252-27264, the Agricultural Marketing Service proposed amendments to the National List of Allowed and Prohibited Substances. The proposal updates the list of non-organic ingredients that may be used in processed foods labeled as organic*.

The proposal was mandated in part by the requirement that processed foods containing non-organically produced ingredients be allowed to be labeled as "organic" so long as the ingredients are 1) unavailable in an organic form; and 2) listed on the national list (the list which the proposal updates.)

The proposal is that the National List be updated to include: casings, from processed intestines; celery powder; chia (Salvia hispanica); colors derived from agricultural products—annatto extract, beet juice, beta carotene derived from carrots, black currant juice, black/purple carrot juice, blueberry juice, carrot juice, cherry juice, chokeberry-aronia juice, elderberry juice, grape juice, grape skin extract, paprika, pumpkin juice, purple potato juice, red cabbage extract, red radish extract, saffron and turmeric; dillweed oil; fish oil—stabilized with organic ingredients or only with ingredients on the national list, §§ 205.605 and 205.606; fructo-oligosaccharides; galangal, frozen; gelatin; hops; inulin-oligofructose enriched; konjac flour; lemongrass-frozen; orange shellac-unbleached; peppers (chipotle chile); starches—rice starch, unmodified—for use in organic handling until May 22, 2009, and sweet potato starch; Turkish bay leaves; Wakame seaweed (*Undaria pinnatifida*); and whey protein concentrate.

FDA has released the "Preliminary Topline Frequency Report" of its Experimental Study of Health Claims on Food Packages. The report is the result of a project begun in November 2003 to study consumers' understanding of front-panel "health" messages, including specific disease-related health claims, structure-function claims, dietary guidance and nutrient content claims. Consumers' understanding of claims which do not mention the nutrient which underlies the benefit of the claim was singled out for evaluation—i.e., "yogurt may reduce the risk of osteoporosis," as compared to "calcium-rich foods, such as yogurt, may reduce the risk of osteoporosis."

Some 18 front panels were investigated: yogurt/calcium/osteoporosis, orange juice/potassium/high blood pressure, and pasta/lysoton (a fictitious nutrient)/heart disease on the horizontal axis, and claims of food-specific health claims, substance-specific health claims, nutrient content claim, structure-function claim, dietary guidance, and "no message" on the vertical axis.

The report includes six categories of "selected preliminary findings." Many of the findings relate specifically to consumers' awareness of the three foods shown; however, among the more general findings are the following:

1. When consumers are already generally aware of a health benefit (i.e., calcium and osteoporosis), consumers perceive the same benefit whether it is expressed as a health claim, a structure-function claim, a dietary guidance claim or a nutrient-content claim. This preliminary finding is particularly significant at a minimum of three levels for FDA as it explores the evolution of regulatory guidance: is there a value to the amount of research, study and scientific agreement required by FDA to support a health claim (significant scientific agreement) versus that required for a nutrient content claim (% of DV)? Secondly, if "good" or "excellent" convey the same net takeaway as lengthy health claims, does the additional language create unnecessary confusion as to the message; and, thirdly, if consumers are reading past the limitations of the claim, is there a potential for consumer injury? (Finding 5.b.)

2. The format of the claim (health claim, structure-function claim, dietary guidance) does not affect the likelihood of the consumer recognizing the presence of the nutrient in the food. (Finding 2.c.)

3. When there is a widespread understanding of the benefit of a nutrient, the nature of the claim (health claim, structure-function claim, dietary guidance) does not affect whether consumers will recognize the presence of the nutrient in other foods. (Finding 4.a.)

4. A nutrient health claim is the best motivator to purchase. (Finding 6.a.)

The purpose of the study is to "enhance(s) FDA's understanding of consumer responses to health claims and informs any policy initiatives(s) that FDA may undertake in the future." pf

*"Organic foods" must contain at least 95% organic ingredients.



Mark S. Hostetler is an attorney at Blackwell Sanders LLP. He can be reached at mhostetler@blackwellsanders.com.

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Omega-3 foods represent a multi-billion $ market opportunity.



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What is Omega-3?

Omega-3 is an essential nutrient that is vital for good heart health, normal growth and development, as well as a host of other important health benefits. Every cell in your body contains Omega-3 but, unfortunately, your body can't produce Omega-3 on its own so you need to consume it by eating foods that contain Omega 3 … like fish!

Omega-3 includes EPA (eicosapentaenoic acid), DHA (docosahexaenoic acid) and ALA (alpha linolenic acid). However, only EPA and DHA provide all the health benefits associated with Omega-3 and only fish contains both EPA, and DHA, the essential components of Omega-3 that are so vital to your overall good health.

Omega-3 EPA and DHA: The "super nutrient" for heart health …and so much more

Over 8,000 research publications support the health claims of EPA and DHA. Only calcium has as much scientific evidence proving its importance to human health. Here are just a few of the many areas of study where Omega-3 have been shown to be of significant health benefit:

General Health and Well-Being

Studies show that EPA and DHA from fish oil:

- Are cellular building blocks
- Help maintain a healthy heart
- Help prevent the build up of plaque on the artery wall
- Aid in the normal growth and development of the brain, eyes, and nerves
- Are a factor in the maintenance of good health

Heart Health

Research suggests that EPA and DHA combined:

- Have a beneficial effect on heart rate, a major risk factor for sudden cardiac death
- Reduce the risk of developing arrhythmia, a risk factor for sudden cardiac death
- Reduce triglyceride levels, an independent risk factor for coronary artery disease
- Lessen the effects of chronic inflammation in the heart and blood vessels
- Reduce the risk of developing angina, heart attack and stroke

Brain Health: Cognitive Health and Development

Research indicates that Omega-3 DHA from fish oil positively influences:

- Normal development of the brain, retina (eyes), and nervous system of the fetus
- Cognitive development of infants
- Duration of gestation and infant size at birth
- Postpartum depression (PPD)
- Cognitive function
- Alzheimer's disease

Brain Health: Mental Well-Being and Mood

Research indicates that EPA and DHA from fish oil has been linked to imrovements in:

- Depression
- Bipolar disorder
- Schizophrenia
- Attention Deficit Hyperactivity Disorder (ADHD)

Anti-Inflammatory: Joint Pain and Digestion

Research indicates that EPA from fish oil helps to:

- Reduce joint tenderness
- Reduce the duration of morning stiffness
- Alleviate symptoms for ulcerative colitis, an inflammatory bowel disease

* Research referernces available upon request

on board with MEG-3®

Omega-3: Increasing Consumer Awareness and Explosive Category Growth

Awareness of the health benefits of Omega-3 EPA and DHA has skyrocketed in the last few years. Although the science of Omega-3 is complex, the message is very simple: foods containing Omega-3 are good for your heart, your brain and just about every other part of your body. As a category, Omega-3 foods have seen explosive growth. In the last two years, the number of new products being introduced has nearly doubled. And recent market analysis predicts that Omega-3 foods will become a 7 billion $ market opportunity by 2010. If you don't already have an Omega-3 product, you're likely in the process of developing one. If you're not, you should be. You can bet your competitor is.

Read on to learn about:

- ***Why the fact that people aren't eating enough fish is good news for you***
- ***Why Omega-3 from flax and algal sources can't provide the same health benefits as those from fish oil***
- ***How our breakthrough technology makes it possible to add Omega-3 EPA and DHA from fish oil to virtually any food product with zero impact on taste, smell or texture***
- ***Why multi-national brands like Danone, Heinz, PepsiCo, Tesco, and Unilever are using our MEG-3® ingredient***
- ***How a little fish named "Meg" can help you make a big splash in the food market!***



Now there's more th
the very best so

We're not eating enough fish

It's a well-known fact that most people, particularly in the Western hemisphere, don't eat enough fish. In fact, 75% of people in North America do not consume an adequate amount of EPA and DHA Omega-3. Therefore, it is not surprising that the World Health Organization, and others, have identified a serious and pervasive deficiency in this essential nutrient.

While there has been a sharp decline in fish consumption over the past half century there has been a dramatic increase in the consumption of vegetable oils. This disproportionate rise in the consumption of Omega-6 fatty acid has resulted in the current intake ratio of Omega-6 to Omega-3 of approximately 25 to 1 in Western diets, whereas earlier in the century the ratio stood at about 3 to 1. This imbalance is known to be a major risk factor for heart and inflammatory diseases. There is also evidence that it may be linked to psychiatric and neurological disorders and childhood neurodevelopmental disorders including Attention Deficit Hyperactivity Disorder (ADHD), dyslexia, dyspraxia/ developmental coordination disorder (DCD), and autistic spectrum disorders. Omega-3 deficiencies are also thought to play a role in asthma, hypertriglyceridemia, high blood pressure, and rheumatoid arthritis.

Your grandmother was right... Fish oil really is good for you

There are important differences between Omega-3s derived from plant sources (flax, soy), algal sources, and fish sources. Only Omega-3, from fish, contains both EPA and DHA. EPA and DHA are considered physiologically essential, and readily bioavailable, enabling the body to put them to immediate use. In fact, EPA and DHA work synergistically and in different combinations throughout various life stages. DHA is especially important during infancy and early childhood while EPA plays a more important role after age two, particularly in cognitive function and heart health.

All Omega-3s are not created equal

Omega-3 from algae contains only DHA, so the health benefits of EPA are absent. Similarly, plant-based Omega-3 contains only ALA which, according to the Institute of Medicine, is not known to have any specific function other than as a precursor to the formation of EPA and DHA. Before ALA can be utilized the body needs to convert it to EPA and DHA. Unfortunately, this conversion rate is so inefficient (about 2%) that it is virtually impossible to consume enough vegetable -based Omega-3 to achieve any significant health benefit. In fact, the remaining 98% of ALA that is not converted merely adds to caloric intake.



an one place to find urce of Omega-3

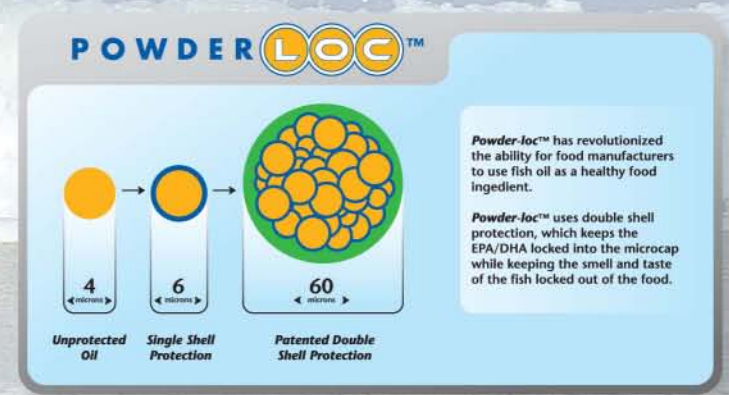


The goodness of fish without the "fishy"

Consumer awareness of fish oil as the best source of Omega-3 is already very high. It is no longer enough to simply label a product "contains Omega-3". Consumers want to know that they are buying the best source of Omega-3 … from fish oil.

Unfortunately, until now, working with fish oil in food processes has been a messy, smelly and generally unpleasant business. The results have often been somewhat unpleasant as well, with some products exhibiting a slightly fishy taste or unusual odour. That's why we've developed MEG-3®, a powdered healthy food ingredient derived from fish oil.

MEG-3® is manufactured using our exclusive Powder-loc™ technology. Powder-loc™ utilizes patented double shell protection, producing a free flowing, dry powder with a unique molecular construction that locks in the health benefits of Omega-3 and locks out even the slightest hint of fishiness. MEG-3® is the only food ingredient to deliver all of the health benefits of Omega-3 with absolutely zero impact on the taste, the smell, or the texture of your food product. Not only that, it has a remarkable process tolerance that makes it ideal in a wide variety of food manufacturing applications.



Omega-3 "A La Carte" – Because healthy choices add up!

The products on these pages contain the best source of Omega-3 because they're manufactured using MEG-3®, a healthy food ingredient, derived from fish oil. With a wide variety of Omega-3 food products available, and more being introduced every day, the average family can fill their shopping basket with their favorite brands while enjoying all of the health benefits of Omega-3 EPA and DHA.

Fish oil: Fact

Consuming refined, purified fish oil is even safer than eating fish!

Refined fish oil is not considered an allergen and has no detectable levels of man-made impurities. Our raw material is derived from sardine and anchovy off the coast of Peru, one of the most pristine oceanic environments in the world. Additionally, these species have a short life cycle and they are also at the bottom of the food chain. Consequently, they don't accumulate contaminants. Furthermore, every batch of fish oil is tested, and hand selected, before refining. During the production process the oil must pass more than 200 quality checks.

There's no "oil crisis" here... and plenty of fish in the sea.

Fish oil is actually a by-product of the fishmeal industry, so it makes use of what would otherwise be waste. The nutrition industry uses less than 5% of global fish oil production which has ranged between 1.1 and 1.5 million tonnes per year during the last thirty years. Current forecasts through to 2025 indicate that there will be no appreciable change, and production levels will average 1.3 million tonnes per year. Ocean Nutrition Canada sources its raw material primarily from Peru, which has one of the most tightly regulated and monitored fishing industries in the world. Thanks to a "responsible catch" policy, Peru's main species in the production of fishmeal, and fish oil, have maintained a stable population for the past fifty years.

You can have it all - but you don't have to get it all in one serving

Savvy food manufacturers understand that you don't need to get your recommended daily intake of Omega-3 in a single serving … just as you wouldn't expect to fulfill your daily need for calcium by drinking a single glass of milk. It's the accumulated amount of nutrients from all of the food eaten in a day that provide the necessary health benefits for overall well-being. That's why health conscious consumers try to eat balanced meals and choose to include a variety of foods in their diet. By creating a portfolio of products containing MEG-3®, your customers will have variety, and choice, encouraging multiple product purchases in your family of food brands. You will beat your competitors for share of stomach, more meal events, and dominate shopping basket share. One thing is certain; no one is going to get all these Omega-3 health benefits from a product that contains no Omega-3.

and future



How a little fish can help your product make a big splash

We'd like to introduce you to a little fish named "Meg". You're going to be seeing a lot of her on milk, yogurt, bread, spreads, tortillas, baby food, and a variety of other food products including brands from some of the world's biggest multinationals. Soon, she'll even be the star of our new Omega-3 consumer awareness program. So, when your customers are looking to fill their shopping baskets with healthy choices that contain the best source of Omega-3 EPA and DHA … they'll be looking for our "Meg" on the package.

You see, Omega-3 may be complicated but "a little fish" is really quite simple.

When you get onboard with MEG-3® … you'll be in good company

We like to think of "Meg" as more than just a logo or a brand, she's really our team mascot. A team that includes some big name players like Danone, Heinz, PepsiCo, Tesco and Unilever. All heavy hitters … we think you'd agree. We call our team "Club Meg" and we're always looking for new members. We seek forward thinking partners who see the value in superior technology combined with savvy, consumer friendly marketing. Don't be left telling the story about "the one that got away", give us a call today and get onboard with MEG-3®

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If you're looking for the best source of Omega-3… allow us to introduce you to MEG-3®, a completely tasteless and odorless Omega-3 healthy food ingredient, derived from fish oil. That's right, fish oil.

Everyone knows that fish oil is the best source of both EPA and DHA Omega-3, but when it comes to food manufacturing, playing around with fish oil has been a challenge… until now.

MEG-3® is manufactured using our exclusive Powder-loc™ technology. Its patented double shell protection produces a free flowing dry powder with a unique molecular construction that locks in the health benefits of Omega-3 and locks out even the slightest hint of fishiness. That's why our MEG-3® ingredient can be easily incorporated into any production facility with "no muss no fuss".

MEG-3® is proven and versatile. It has already been incorporated into major multinational food brands in a wide variety of food categories around the globe. In fact, this year, food manufacturers in over a dozen countries will produce over two billion servings that include MEG-3®, and Ocean Nutrition will continue to be their dependable supplier of choice.

In today's competitive market place, you can't afford to be the one who let the little fish get away! With MEG-3® there's no instability, no taste, and no smell, so there's no longer any need to compromise with inferior Omega-3 ingredients. Want to ride the Omega-3 wave? Join the world's leading food brands and choose MEG-3® Omega-3 EPA/DHA healthy ingredient.

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NUTRA Solutions | PREPARED FOODS

A New Look at BONE HEALTH

Although vitamin D and calcium are the mainstay ingredients for osteoporosis prevention, studies show formulators would be wise to also consider vitamin K2, phosphorous, magnesium, prebiotics and soy.

Ginny Banks, Contributing Editor



According to the NIH, osteoporosis is a major public health threat for 44 million Americans, 68% of whom are women.

The risks of many age-related health problems can be decreased with advanced planning, and in the case of healthy bones, one must plan way ahead. Ensuring good bone health in later years should begin as early as childhood and adolescence, as these are critical times for net bone accumulation. In an attempt to get this message across to pre-teen girls, the Center for Disease Control and the Department of Health and Human Services have launched the National Bone Health Campaign (NBHC), a multi-year campaign including the book, *Powerful Bones, Powerful Girls*, to promote optimal bone health in girls nine-12 years old. The goal is to reduce their risk of osteoporosis later in life.

Why such early intervention? Bone is in a constant cycle of resorption (breaking down) and new formation. The forming of bone exceeds resorption in these early years, resulting in a net accrual of bone with about 50% completed by adolescence and reaching 90% by the age of 18. Bone formation will continue to outpace resorption until peak bone mass (maximum bone density and strength) is reached at around age 30. Thereafter, bone resorption slowly begins to exceed bone formation. Like protecting your skin from the sun early in life to avoid wrinkles and skin cancers, the benefits of protecting your bones also will not be visible for years, as the onset of ostoporotic symptoms usually does not occur until after 50.

Osteoporosis, which literally means porous bones, is a disease that reduces bone mass and increases bone fragility. According to the National Institutes of Health, osteoporosis is a major public health threat for 44 million Americans, 68% of whom are women. One out of every two women and one in four men over 50 will have an osteoporosis-related fracture in their lifetime. Although there are uncontrollable factors that put one at risk for bone loss such as gender, genetics, body size and age, there are numerous lifestyle choices that lead to better bone health. Fortunately, the factors having the most influence in reducing the risk of osteoporosis are already familiar to us—a healthy diet (specifically optimal levels of calcium and vitamin D) and regular physical activity.

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Building Better Bones

Nutrient	RDA	More Ideal Intake	Average Intake
Calcium	800 to 1,200mg	1,000 to 1,500mg	400 to 500mg; typical diet is inadequate
Phosphorous	800 to 1,200mg	800 to 1,200mg	Inadequate intake is rare; excessive intake common
Magnesium	350mg (males) 300mg (females)	450 to 800mg	Intake generally inadequate
Fluorine	No RDA; adequate safe range 1.5 to 4.0mg	n/a	Between 0.2 to 3.4mg
Silica	No values yet set	5 to 20mg	Intake is unknown, suspected to be low
Zinc	12 to 15mg (adults)	20 to 40mg	Average intake is 46% to 63% the RDA
Manganese	2.0 to 5.0mg (adults)	10 to 40mg	Intakes generally inadequate; 1.76 (girls), 2.05 (women), 2.5 (males)
Copper	2.0 to 3.0mg (adults)	2 to 4mg	75% of diets fail to contain the RDA
Boron	No RDA established	3 to 4mg	1/4mg intake is common
Vitamin D	200IU (adults) 400IU in growth	800 to 1,200IU (with testing more at times)	Deficiency is common among elderly
Vitamin C	60mg (adults)	3,000mg and up	26% of the population consumes less than 70% than RDA
Vitamin A	5000IU (males), 4000IU (females)	5,000IU (males), 4,000IU (females)	31% consume less than 70% than RDA
Vitamin B6	2.2mg (males), 2.0mg (females)	50 to 100mg	Over one half consume less than 70% than RDA
Vitamin K	70 to 140mcg (adults)	1000mcg and up	60 to 80mcg
Vitamin B12	3.0mg (adults)	100 to 1000mcg	12% consume less than 70 RDA
Fats	No RDA, 7% of calories minimum, gov't not to exceed 30%	15% of total calories is more ideal	Average American consumes nearly 40% of his/her calories in fat; the consumption of essential fatty acids is generally deficient, however
Protein	63g (males)	40 to 60g	Often approaches 100g

Source: www.betterbones.com/bbbb_charts/key_nutrients.htm; extracted from *Better Bones Better Body* (Keats 2000) by Dr. Susan E. Brown

The non-profit Osteoporosis Education Project, a division of East Syracuse, N.Y.-based Leading Edge Research Inc., lists 17 nutrients essential for bone health. The organization recommends generally higher intake levels than the RDA. The current average American intake of each nutrient is listed as well.

Vitamin D and Calcium

Calcium and vitamin D are the mainstays of supplementation for prevention of osteoporosis. The connection between calcium and reducing the risk of osteoporosis was made over 50 years ago, eventually spurring one of the first FDA-approved health claims in foods in the Nutrition Labeling and Education Act of 1990. This health claim drove the huge growth of calcium-fortified foods such as orange juice and breakfast cereals, which many consider to be the first "functional foods." In January of this year, following the review of scientific evidence supporting the combination of calcium and vitamin D for reducing the risk of osteoporosis, the FDA has proposed updating this health claim to include the addition of vitamin D, which works by optimizing the absorption and deposition of calcium. Since vitamin D is found naturally in very few foods, many functional foods manufacturers have already sprinted to market with products containing the calcium and vitamin D combination. This proposed new claim will likely increase this trend.

Other Vitamins

As the expected life span in the U.S. increases and as the Baby Boomer generation ages, the number of people diagnosed with osteoporosis is expected to increase and reach



epidemic proportions. In fact, the president has declared 2002–2011 as "National Bone and Joint Decade" to raise awareness and promote research into therapies and preventative measures for bone diseases such as osteoporosis. Research is now looking beyond calcium and vitamin D and confirming epidemiological studies with clinical trials. One example is the recent clinical research on vitamin K2. The journal *Osteoporosis International* just reported that vitamin K2 supplementation (45mg per day) improved bone strength in postmenopausal women by improving bone mineral content. Vitamin K2 enhances the accumulation and production of osteoclain, a bone matrix protein that has an affinity for bone mineral constituents. Vitamin K2 is available both in the synthetic form (MK-4 or menatetrenone) and a naturally derived form from the fermented soy product natto (MK-7 or menaquinone). MK-7 requires a lower dosage compared to its synthetic counterpart, possibly because supplementation with MK-4 has been reported to result in more stable serum levels.

Another vitamin which may be important for both men and women in maintaining strong bones is vitamin B12. The Framingham Osteoporosis Study, conducted by the USDA Human Nutrition Research Center on Aging, measured bone mineral density and vitamin B12 levels in over 2,500 participants and found that both men and women with lower B12 levels had lower bone mineral densities. The study also reports that older adults often have B12 deficiencies, because they may have difficulty absorbing protein-bound vitamin B12 as it is found naturally in foods. However, unbound vitamin B12, as found in supplements or fortified foods, is better absorbed. This information provides good reason for the addition of B12 in functional foods and supplements geared towards bone health.

Vitamin K2 enhances the accumulation and production of osteoclain, a bone matrix protein that has an affinity for bone mineral constituents. The naturally-derived form (MK-7 or menaquinone) requires a lower dosage compared to its synthetic counterpart (MK-4 or menatetrenone).

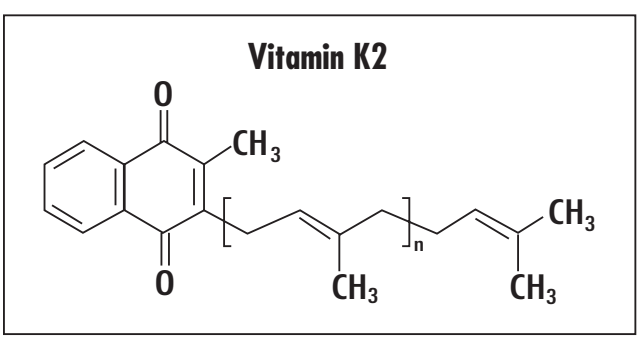
Vitamin D is naturally found in some fatty fish such as mackerel and salmon, plus eggs from hens that have been fed vitamin D. However, vitamin D-fortified foods are the most common dietary source.

Other Minerals

Other key minerals, such as magnesium and phosphorous, work synergistically with calcium and vitamin D to increase bone mineral content. Phosphorous binds with calcium to form hydroxyapatite, the main mineral component of bone, which also requires magnesium for crystallization. Phosphorous absorption is also regulated by vitamin D. However, formulators of bone health products must pay particular attention when combining these minerals, as they may interfere with each other. For instance, magnesium taken at the same time as phosphorous reduces phosphorous absorption. The Framingham Study also found a correlation between the consumption of cola, which contains phosphoric acid, and low bone density. The study suggests that phosphoric acid may be the culprit, because it changes the body's normal calcium/phosphorous ratios. The newest mineral recognized for its potential in bone health is silicon. The *Journal of Nutrition Health and Aging* reported epidemiological evidence supporting positive associations between dietary silicon intake and bone mineral density.

Prebiotics and Bone Health

There is emerging research on ingredients beyond vitamins and minerals for bone health such as prebiotics—specifically oligofructose-enriched inulin. Inulin is in the category of natural oligosaccharides, which are polymers of simple sugar molecules, mostly fructose. This form of soluble fiber is found in many vegetables and roots such as chicory root, bananas, barley and Jerusalem artichokes. In the body, inulin is converted oligofructose, also known as fructo-oligosaccharides (FOS). These shorter fructose polymers are not digested in the intestines and beneficially affect the microflora in the colon by selectively stimulating the growth of various bacteria species. The effect of FOS on bone health is multifaceted. The increased bacterial production increases the production of short chain fatty acids, which are believed to decrease the pH inside the



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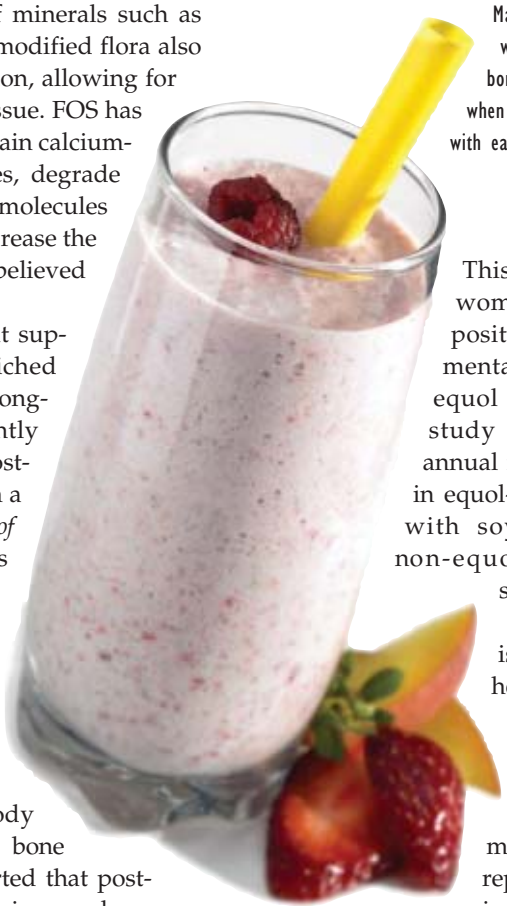
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colon, thus increasing the solubility of minerals such as calcium. Fermentation products of the modified flora also mediate an enlargement of the absorption, allowing for higher transport of nutrients into the tissue. FOS has been shown to increase the levels of certain calcium-binding proteins in the large intestines, degrade phytates, the calcium-binding plant molecules found in beans, nuts and grains, and increase the release of phytoestrogens from foods believed to have bone-conserving properties.

Recent clinical trials have shown that supplementation with oligofructose-enriched inulin, a combination of short-and long-chain fructose polymers, significantly increases calcium absorption in both post-menopausal women and adolescents. In a trial published in the *American Journal of Clinical Nutrition*, pubertal adolescents were randomly assigned either 8g per day of mixed short- and long-chained inulin-type fructans or a placebo. The calcium absorption in the fructan group was 8.5% greater than the control group after eight weeks and 5.9% greater after one year. The fructan group also showed higher whole-body bone mineral content and whole-body bone mineral density. A second study reported that post-menopausal women had increased calcium and magnesium absorption after six weeks of supplementation with a mixture of chicory oligofructose (short-chain polymers) and long-chain inulin.



Magnesium and phosphorous work synergistically with calcium and vitamin D, but formulators of bone-healthy products must pay particular attention when combining these minerals, as they may interfere with each other.

PHOTO COURTESY KERRY INGREDIENTS

Soy

It is well-established that estrogen, in the form of hormone replacement therapy, has been linked with reduced risks and symptoms of osteoporosis in post-menopausal women. With the current trend to move away from synthetic estrogen therapy, the question naturally arose whether phytoestrogens, such as soy isoflavones, would have similar effect on bone health, particularly following menopause. While animal studies, which have been conducted predominantly with animals whose ovaries have been surgically removed, have been promising, studies with humans have been inconclusive and at times contradictory. The complex set of risk factors associated with osteoporosis, such as environment-genetic interactions, life stage and ethnicity, combined with the small sample sizes and the variations in the study conditions makes it difficult to reach definitive conclusions. A recent clinical trial introduced yet even another variable—a woman's ability to produce equol, the more biologically-active metabolite of daidzein, the principal isoflavone from soy. This clinical trial of postmenopausal women suggests that there is a more positive effect of isoflavone supplementation in women who are better equol producers. The results of the study showed significantly smaller annual reduction in bone mineral density in equol-producing women supplemented with soy isoflavones compared with non-equol producers who were also supplemented.

The debate on whether soy isoflavones have an effect on bone health continues to swing back and forth. The debate may swing towards the positive side with the recent results of a meta-analysis using nine studies and over 430 menopausal women. This analysis reported that isoflavone intervention significantly inhibits bone resorption and stimulates bone formation with as little as 90mg per day. On the other hand, the debate may balance out with the recent study of 13 post-menopausal women in which soy isoflavones did not affect bone resorption. This particular study is noteworthy because it is the first to use a new, quick and more powerful technique of monitoring changes in bone metabolism using 41Ca, a radioisotope of calcium.

Epidemiological studies suggest that soy consumption as a whole may also improve bone health. A large cohort study of approximately 75,000 women (40-70 years of age) compared the association of soy food consumption and the risk of fractures. An inverse relationship was found between consumption of soy and the number of fractures, even after adjustment for age, major risk factors and other dietary variables. This study also reported the positive effects of soy were even more pronounced among women in early menopause. This is in agreement with many other studies also proposing that the beneficial effects of soy on bone health may be life-stage specific—perio-menopausal or early menopausal women appear to be more receptive to the therapeutic effects of soy. Considering that the rate of bone loss is greatest in the first years of menopause, increased soy intake may be advisable during these years.

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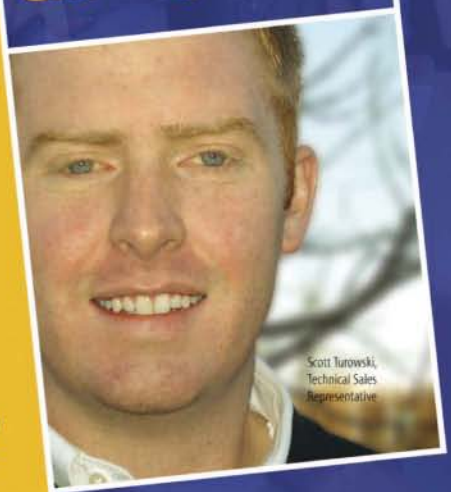
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On the Web: BONE HELP

- www.osteo.org—NIH Osteoporosis and Related Bone Diseases—National Resource Center
- www.cdc.gov/powerfulbones/boneup/index.html—Powerful Bones Powerful Girls – National Bone Health Campaign by CDC and National Osteoporosis Foundation Geared toward preteen girls
- www.betterbones.com—Osteoporosis Education Project – Headed by Dr. Susan Brown, a medical anthropologist
- www.fore.org—Foundation for Osteoporosis Research and Education
- www.nof.org—National Osteoporosis Foundation

Other Dietary Factors

Of course, a healthy bone diet also includes avoidance or moderation of certain dietary factors. Dr. Susan Brown, author of *Better Bones, Better Body*, calls these "bone robbers." Bone robbers include excessive protein, caffeine, alcohol, cola drinks and sodium. Dr. Brown, a medical anthropologist and certified clinical nutritionist, also states that a poor diet is not the only cause of osteoporosis. From a cross-cultural perspective, "A more realistic conception of the cause of osteoporosis is that of varied bone-depleting factors, each building one upon the other. Each bone-depleting factor adds to the others until the total load is more than our bone can bear." No pun intended. NS

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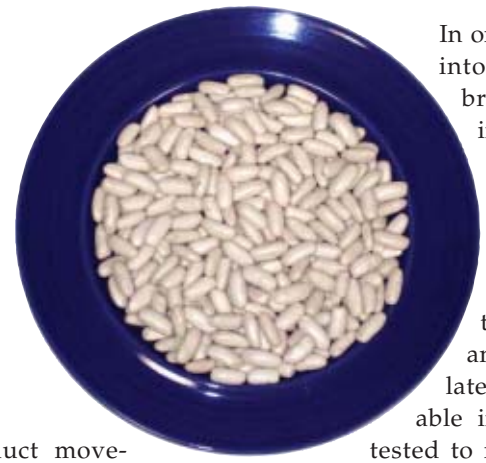
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Light STARCH, Please



Kerry Hughes, R&D Applications Editor

"The low-glycemic product movement has made it out of the corners of health food stores to become a widely accepted addition to supermarkets, mass merchandisers and drug stores, where they are often double-marketed with like foods. They can be seen in the diabetic supplies aisle, as well," says Don Montuori, the publisher of Packaged Facts, as he explains how the low-glycemic movement may grow and create product offerings akin to the low-carb craze. In its report "Low Glycemic Index Food and Beverages in the U.S.," year-end sales are estimated at $350 million and predicted to grow 45% annually through 2011, resulting in sales touching $1.8 billion by 2011.

To make the transition to low-glycemic formulations easier for food manufacturers, Pharmachem has recently developed StarchLite™, a patented ingredient containing an extract of the white bean, also known as Phase 2®. It may be added to food formulations to lower the glycemic index and help to lower the digestion and absorption of carbohydrates. According to Gregory Drew, director of the food and beverage group at Pharmachem Laboratories, "Sensory and taste evaluations have shown that consumers favorably compare baked goods containing StarchLite to control products. Applications include baked goods, cereals, frozen foods, packaged meals, pasta, potato products, pizza crusts, soups, beverages, sauces, dips, chips and confectionery goods. StarchLite has repeatedly been found to have significant glycemic index lowering properties, as well as α-amylase inhibitory activity. It also has the added benefit of reducing weight, as shown in clinical studies."

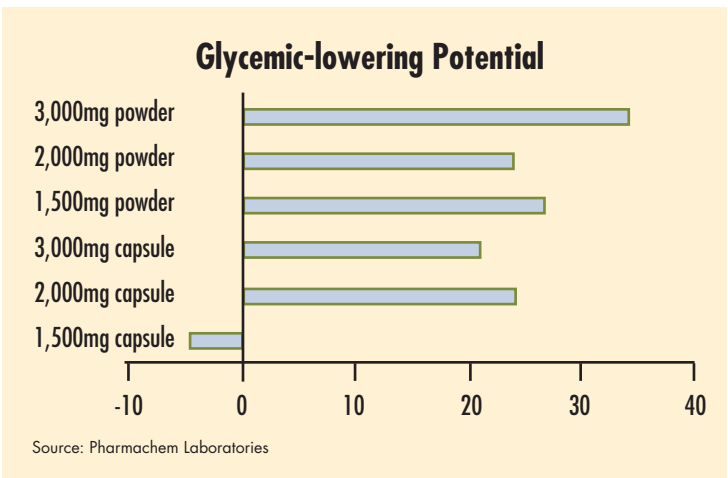
In one study, the percentage reduction in glycemic index of a bread was found to depend on the amount of patented white bean extract incorporated into the product, which was also greater than when the extract was consumed separately in an encapsulated delivery form.

In one study, StarchLite was formulated into butter and spread on Wonder brand white bread; the glycemic index was decreased by 35%—a statistically significant reduction, according to Jay Udani, M.D., medical director, Pacific West Research (the facility where the research was performed). It did not modify the taste or texture of the bread. In another study, StarchLite was formulated (at 3%) into commercially available instant mashed potatoes and then tested to measure the inhibitory activity on α-amylase. After preparation of the instant mashed potatoes, StarchLite was nearly unaffected and retained activity. In at least two other double-blind, placebo-controlled studies on the effects of this ingredient on weight loss, the participants who consumed StarchLite lost significantly more weight than those on the placebo, averaging about a 5lb loss per month while consuming between 500-1,500mg per day.

As Billy McLellan, senior vice president of business development at Pharmachem Laboratories, says, "The low-glycemic technological innovations being discovered in food science may put the 'wonder' back in white bread." NS

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Temptations with Good Properties



Items such as omega-3s, polyols, eggs and choline, as well as low-glycemic index foods, have captured consumer interest with their bent toward healthy, tasty foods. Attendees of *Prepared Foods'* 2006 R&D Seminar learned about several good-for-you ingredients.

Growth of Omega-3 Products in North America

The use of omega-3 fatty acids has been growing for over 20 years. The May 2005 "Omega-3 Oils Market Analysis" report by Datamonitor predicted a rosy future for omega-3s. The forces that will drive this market are greater health awareness; an aging population; a shift in marketing focus towards healthier products; greater purchasing power; a demand for greater convenience and immediate health benefits; and technological advances that allow the development of healthy products that enhance flavor, odor and stability.

Some of the primary sources of omega-3 fatty acids are flaxseed and coldwater fish. The former contains ALA omega-3 (alpha linolenic acid) and the latter DHA and EPA. The U.S. market for functional health foods was valued in excess of $28.1 billion in 2003. This market is expected to maintain growth levels of 6.6% through 2008. (See chart "Functional Foods Market Sizes and Expected Growth.")

Statistics show very high consumer awareness regarding omega-3 fatty acids. However, even though over 50% of adults consume some kind of omega-3 supplement or omega-3 fortified food, people are confused over its health benefits, according to the Datamonitor analysis report.

If one examines specific market segments for omega-3 fortification and the omega-3 label, one sees significant increases in a number of different areas. Breads and pastries—often fortified with flax or flax oils—had new product releases numbering from less than 20 in 1999 to almost 200 in 2005. Similar trends were noted for beverages, which jumped from 112 in 1993 to 426 in 2005. Salad dressings, spreads, dips and oils had 172 new releases in 2005, according to Datamonitor online. Processors have also added omega-3 fatty acids to ice creams, frozen novelties, yogurts, pasta and pasta dishes, vegetables, pizzas, hot snacks and side dishes. There has been a similar increase in new products that contain flaxseed with an omega-3 label.

One of the benefits of omega-3 addition is that the FDA has allowed processors to make health claims for products with added omega-3. Products that contain 260mg of alpha linolenic acid (ALA) or 1.3g of flaxseed may be may be labeled as a high, rich or excellent source of omega-3, whereas a good source

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Functional Foods Market Sizes and Expected Growth

	2008	2003	1998	CAGR 2003-2008	CAGR 1998-2003
Dairy	7,422	4,860	3,416	8.8%	7.3%
Bakery and cereals	5,133	3,429	2,219	8.4%	9.1%
Beverages	7,366	5,060	2,724	7.8%	13.2%
Confectionery	1,838	1,347	853	6.4%	9.6%
Snacks	576	499	427	2.9%	3.2%
Dietary supplements	12,779	9,881	7,028	5.3%	7.1%
Other food and drink	3,705	3,057	2,272	3.9%	6.1%
Overall	38,819	28,133	18,939	6.6%	8.2%

Source: Datamonitor Online, December 2005

The U.S. market for functional health foods was valued in excess of $28.1 billion in 2003 and is expected to grow at 6.6% through 2008. Three markets—dairy, bakery and cereals—show growth above this figure, making them primary markets for the growth of omega-3 products.

of the nutrient must contain 130mg of ALA or 0.65g of flaxseed. Processors may also make structure-function claims. Processors may say that omega-3s will support cardiovascular health, the immune system and general health. These types of claims need not be previewed by the Agency and do not need to include the disclaimer "This statement has not been evaluated by the FDA." Consumers appreciate these claims because they are simple and to the point.

"Omega-3 Labeling and Labeling Issues: Growth of Omega-3 Products in North America," Linda Pizzey, president, linda@pizzeys.com, www.pizzeys.com
—Summary by Richard F. Stier, Contributing Editor

Polyols in Bakery Operations

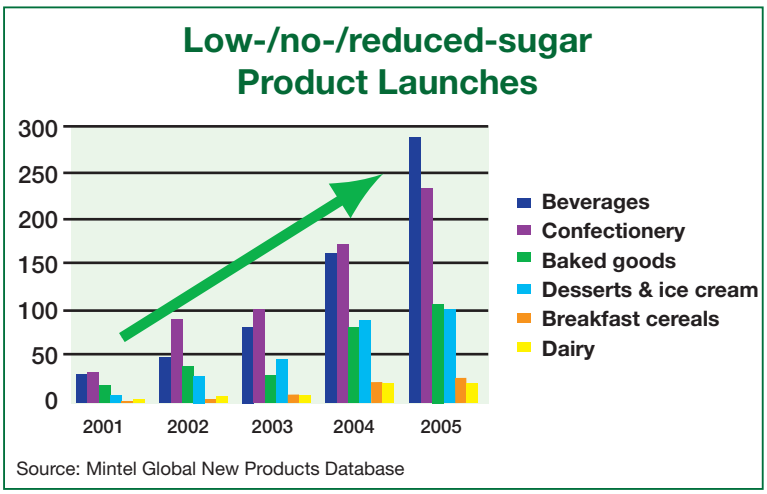
Obesity is a problem in the U.S. and in many other nations. In response, the number of low-, no- or reduced-sugar products that have been released in the past five years has spiked upwards, according to Mintel's GNPD. (See chart "Low-/no-/reduced-sugar Product Launches.")

In developing low-, reduced- or no-sugar products that meet consumer expectations, the first step is to understand the roles of sucrose and corn syrup in foods. For example, sucrose helps develop cell structure during mixing. It increases the gelatinization temperature of flour; increases the coagulation temperature of egg protein; controls the volume of a cake or spread for a cookie; binds moisture; and provides texture. Of course, it also adds sweetness. So, replacing sugars or corn syrup means that any replacement ingredient must provide both flavor and functionality.

Polyols or sugar alcohols (polyhydric alcohols) are one of the most effective and commonly used ingredients as bulk sugar replacers. Not recognized as sugars by the FDA, these carbohydrate derivatives—containing only hydroxyl groups as functional groups—are often found in nature but manufactured commercially from starch hydrolysates. Since polyols are metabolized differently than traditional sugars and carbohydrates, lowering blood glucose levels and reducing calories, they have been used for decades by diabetics. Furthermore, their structural similarity to sugars provides excellent bulk replacement and functionality, unlike high-potency sweeteners such as aspartame and sucralose. However, because they have a reduced functional group (hydroxyl), they do not produce the typical caramel flavors or browning reactions like sugars. Therefore, products manufactured using polyols, such as cheesecakes, may have a lighter appearance. Polyols also have a heat of solution, which can be defined as the amount of heat absorbed or released when dissolved in water. Typically, these "heat of solution" values are negative for polyols in crystalline form and vary greatly from one another. Consequently, as these values decrease or become more negative, a more pronounced cooling sensation is perceived when eaten. Polyols also vary greatly in their solubility in water, which can affect the shelflife or eating quality of a finished baked good such as a cake or cookie.

The key, therefore, is to select a polyol that most mimics the sugar or carbohydrate polymer for which it is being substituted. Generally speaking, for replacing a monosaccharide, consider the polyols sorbitol, mannitol, xylitol or erythritol. Disaccharide substitutions, on the other hand, use maltitol, lactitol or isomalt. Lastly, when it comes to corn syrups, consider maltitol syrups or polyglycitol syrups.

By carefully looking at the various physical properties—such as relative sweetness, humectancy, heat of



Source: Mintel Global New Products Database

Market factors such as more overweight Americans, including both adults and children, have sparked an increase in the number of low-, no- and reduced-sugar products launched in a period of five years (July 2000 to July 2005).

solution, solubility and relative laxation—the developer can create high quality "reduced-sugar," "no sugar added" or "sugar-free" baked goods that consumers can enjoy.

"Understanding Polyols in Bakery Applications: Issues and Opportunities," Peter R. Jamieson, manager of applications research, SPI Polyols Inc., pjamieso@spipolyols.com, www.spipolyols.com
—Summary by Richard F. Stier, Contributing Editor

Flexible Functionality of Eggs

Egg protein has the highest biological value of any protein available in nature (excluding commercial protein isolates). It is a complete protein, which means it contains all the essential amino acids required for protein synthesis. (See chart "Biological Value of Different Proteins.") Egg yolks contain minerals such as iron, phosphorous, calcium, manganese, iodine, copper and zinc, as well as significant levels of vitamins A, D and E, plus biotin, choline, folic acid, inositol, panothenic acid and thiamin.

Egg whites are primarily protein and water. Their functions include foaming, aeration and emulsification, coagulation, flavor and color maintenance, and providing humectancy. When egg whites are beaten, they entrap air, thus creating a colloidal dispersion. As air is incorporated, the foam becomes stiffer. If yolks get into the mixture, they can destroy the foam due to the presence of fat bullets. Other factors that affect foam stability include the degree of beating, blending, homogenization, temperature, pH and water, plus the presence of copper, sugar and salt.

Egg yolks are excellent emulsifying agents. They contain phospholipids, lipoproteins and other proteins that are surface active agents that enable the formation of emulsions. Egg yolk also provides color, the major flavor components and humectancy to food products. Dried whole egg and fresh liquid eggs have similar functional properties. Eggs and egg yolks are used in mayonnaise, Hollandaise sauce, salad dressings and many baked goods.

Both the whites and yolks are used for thickening and coagulation. They bind products naturally and will suspend other ingredients. Heating egg foam creates a stable structure, such as one might see in custards. Coagulation is affected by heat, sugar (raises temperature of coagulation), the presence of acid (drops temperature of coagulation), alkali and agitation.

Because of their good coating and binding properties, eggs impart rigidity, causing mixtures to gel and ingredients to adhere. Egg washes are used for

Biological Value of Different Proteins

■ Whole egg	93.7
■ Milk	84.5
■ Fish	76.0
■ Beef	74.3
■ Soybeans	72.8
■ Rice, polished	64.0
■ Wheat, whole	64.0
■ Corn	60.0
■ Beans	58.0

Source: American Egg Board

Eggs have the highest biological value of any protein available in nature. A complete protein, eggs contain all the essential amino acids required for protein synthesis.



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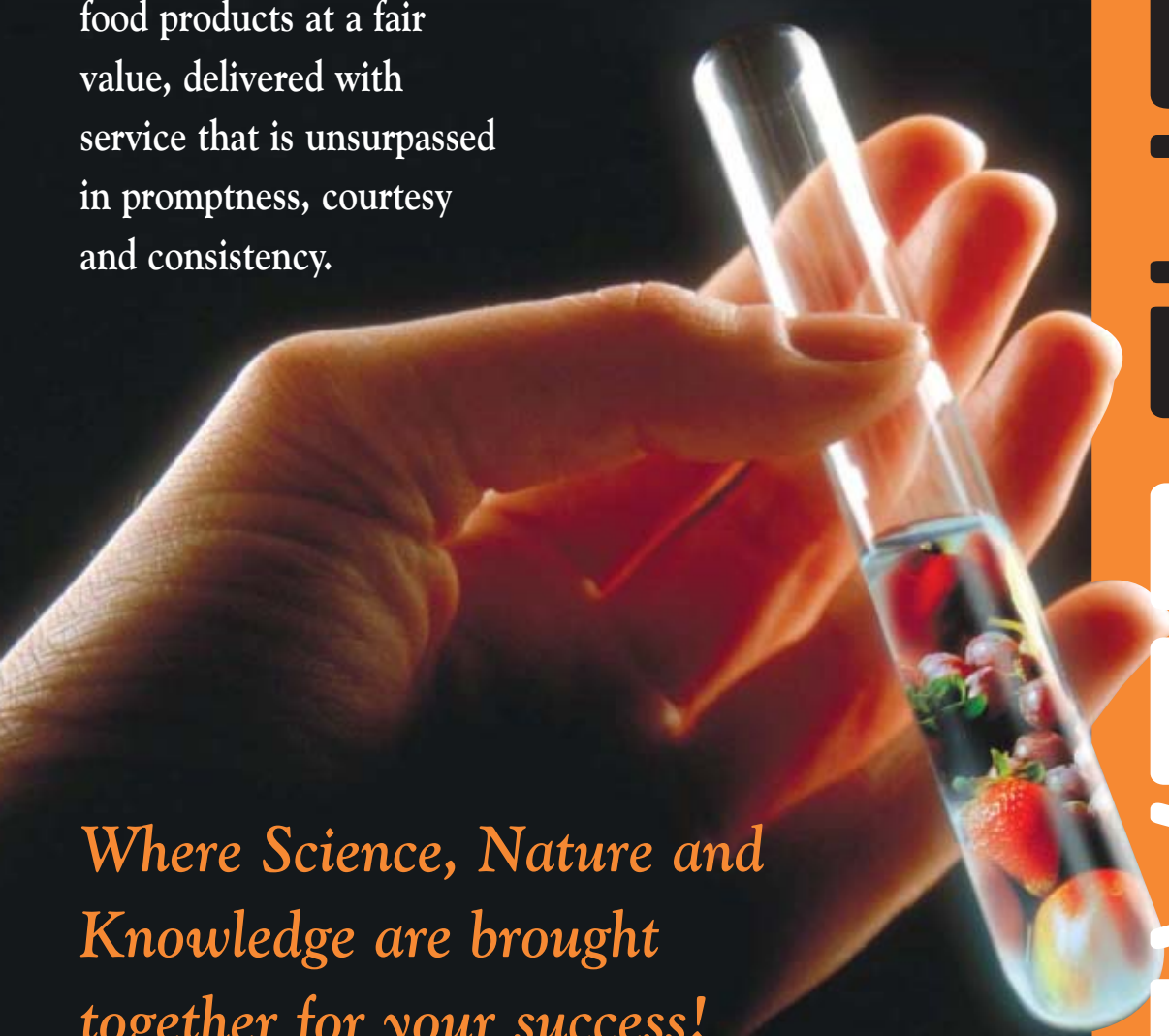
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batters and coatings in home cooking and many industrial applications. There are no significant differences in the binding properties of dried whole egg, dried yolks and of fresh liquid eggs.

Most eggs used in industrial applications are processed liquid, dried or frozen egg products. These have been pasteurized to reduce the potential for foodborne illness.

"The Incredible Edible Egg," Christine Alvarado, Ph.D., assistant professor of Poultry Processing and Value-added Products, Texas Tech University, on behalf of the American Egg Board, christine.alvarado@ttu.edu, www.aeb.org
—Summary by Richard F. Stier, Contributing Editor

The Health Benefits of a Low Glycemic Index

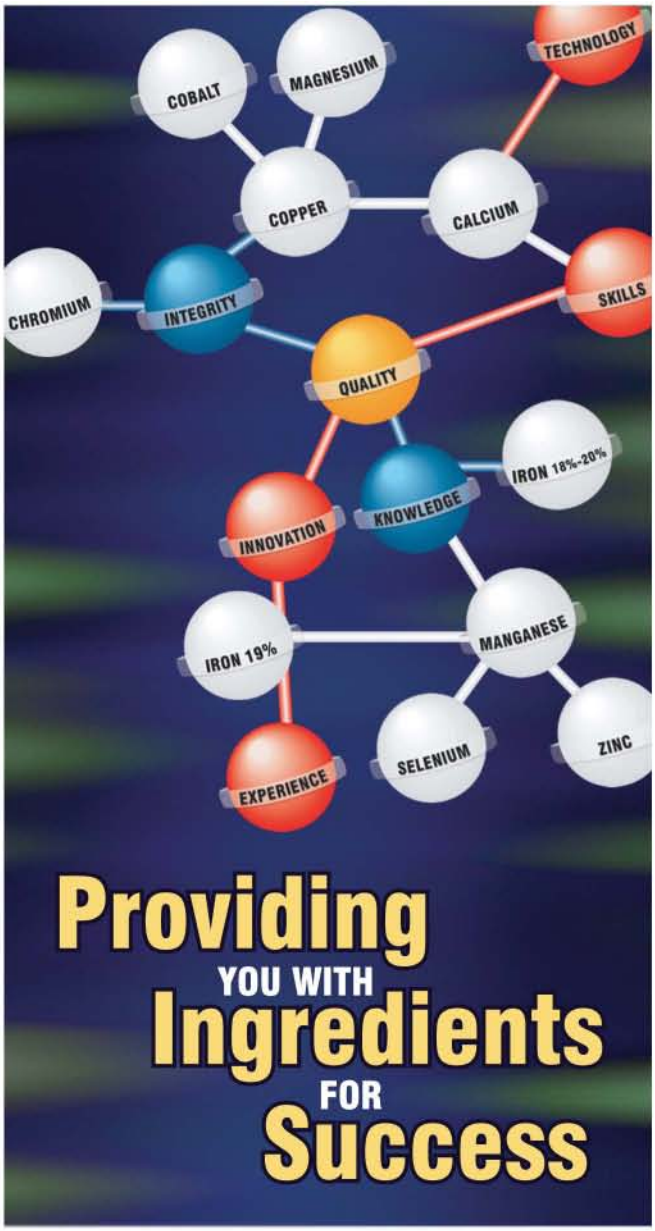
Eating breakfast can help people keep their blood sugar levels from spiking too low, causing them to overeat later in the day. GI has become a hot topic in nutrition circles and amongst consumers. GI is a measure of how the human body metabolizes carbohydrates and is defined as follows:

$$GI = \frac{\text{AUC for 50g of carbohydrate from test food}}{\text{AUC for 50g from a reference food}}$$

Foods containing carbohydrates have different glycemic indices based on the rate at which these products are metabolized (see chart "Glycemic Index Ranking"). Clinical studies have shown that consuming carbohydrates that have lower glycemic indices will reduce the risk of a number of diseases. These include diabetes, cardiovascular disease, colon cancer and endometrial cancer. According to epidemiological studies, it is estimated that the risk of each of these diseases is approximately two or more times higher for consumers eating foods with the highest GI when compared to those with the lowest.

Other studies have shown that low GI diets also reduce fat mass and increase fat oxidation in consumers. Research further indicates that low GI meals increase satiety. High GI meals can promote excessive food intake throughout the day (Ludwig, et al. 1999. *Pediatrics*. 103:E26). There is also evidence that low GI meals will increase physical performance. For example, *al dente* (firm) pasta is one carbohydrate that generally has a low glycemic index. The research confirms what marathon runners and other athletes have espoused for years; that is, prior to intense exercise, a meal of pasta is a good idea. Another 1999 study (DeMarco, HM, et al. 1999. *Med Sci Sports Exerc*. 31:164-70) reported that the time to exhaustion was greater when low GI meals were consumed, which is especially important to long-distance runners or cyclists.

There are a number of factors that affect the rate at which foods are digested. These include the nature of the starch, par-



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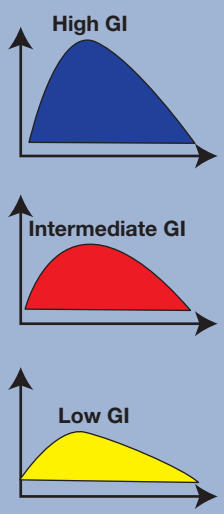
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Glycemic Index Ranking

High GI (70-100)
- Most breads
- Plain crackers
- Most breakfast cereals
- Instant mashed potatoes
- Millet
- Corn chips

Medium GI (56-69)
- All bran
- Oatmeal
- Most biscuits or cookies
- Rice
- Buckwheat
- Sweet corn
- Boiled New potatoes
- Yam
- Sweet potatoes

Low GI (55 or less)
- Pumpernickel bread
- Most pasta
- Parboiled rice
- Most legumes (dried)
- Montmorency cherries
- Barley
- Bulgur (cracked wheat)
- Oat bran



Source: Adapted from Jenkins, et al. 1981. *Am J Clin Nutr.* 34:362-6.

This list shows the glycemic indices of a number of common food products.

ticle size, the presence of fiber and protein-starch interactions that occur in wheat. Starch itself is a complex molecule and undergoes different reactions. Factors such as the ratio of amylase to amylopectin, the degree of retrogradation, the degree of gelatinization and the degree of hydration all affect the rate of carbohydrate absorption

There are now many food companies emphasizing the GI of the products they manufacture. The GI Symbol Program, started in Australia as a non-profit company, now also has licensees in North America. The GI Symbol program ensures that only products tested by an accredited laboratory and meeting healthy nutrition criteria can carry their GI symbol.

"The Health Benefits of a Low Glycemic Index," Alexandra L. Jenkins, Ph.D., director of research, Glycemic Index Laboratories Inc., alexandrajenkins@gilabs.com; an unrestricted travel grant was provided by the Cherry Marketing Institute: www.choosecherries.com
—Summary by Richard F. Stier, Contributing Editor

Choline for Heart, Brain and Liver Health

Choline is an essential nutrient widely distributed in foods, principally in the form of phosphatidylcholine, but also as free choline. Additionally, it is found in foods in the form of the phospholipid sphingomyelin. Unfortunately, the levels of this essential nutrient found in foods may not reach the levels needed for optimal nutrition. It is found in fats and cholesterol, which should not be consumed in large amounts. For example, beef or chicken liver, eggs and bacon are excellent sources of choline. It is also found in foods that infants, who really need choline, may refuse to eat, like cauliflower.

Choline salts, such as choline chloride or choline bitartrate, will not degrade when exposed to heat and light and are GRAS-approved by the FDA. Moreover, choline is mandated by the FDA for use in infant formulas. Choline performs a number of functions in human physiology. It is an important part of cell structure, essential for neurotransmission and cell signaling and, hence, brain development and function. Choline is also a necessary component of

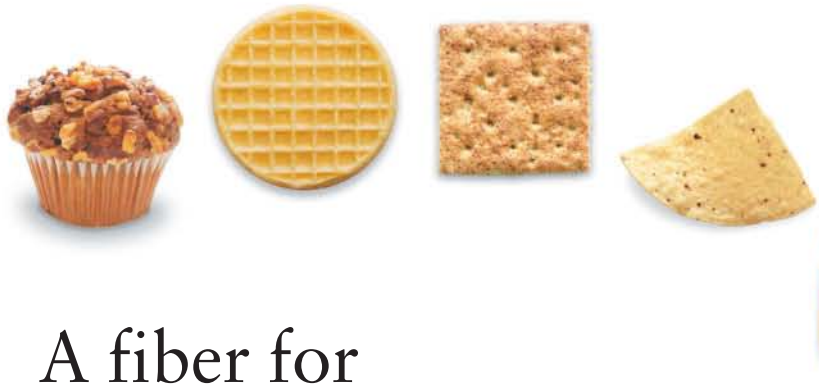
Choline chloride and choline bitartrate are two of the most commonly used forms of choline.

Choline for Food Fortification

	Choline chloride	Choline bitartrate	Choline dihydrogen citrate
Cation content, w/w	74%	40%	35%
Excellent solubility in water	Yes	Yes	Yes
Off-flavor contributed at "excellent source" level	None	None	None

Source: Balchem Encapsulates

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lipoproteins, promoting fat and cholesterol transport from the liver. These physiological functions have allowed the following structure/function claims to be made for the nutrient: 1) it helps memory problems associated with aging; 2) prenatal use enhances lifelong memory; 3) supplementation during infancy increases lifelong memory; 4) choline will reduce fatigue during vigorous exercise; 5) it lowers plasma homocysteine, which can enhance the cardiovascular system and delay the onset of dementia; and 6) it promotes healthy liver function. According to the FDA, foods that have been supplemented with at least 55mg choline per serving are a "good source of choline," whereas those containing 110mg are an "excellent source."

There are a number of options available for supplementing products with choline. Choline is available as choline chloride, choline bitartrate and choline dihydrogen citrate. The chloride and bitartrate compounds are most commonly used. As seen in the chart "Choline for Food Fortification," choline chloride has the highest cation content. All forms of the compounds are soluble in water, which enhances their ability to mix or blend properly, and none will impart off-flavors to the end product.

Choline is highly stable in a wide range of food systems and in most processing operations. It is stable in extruded products over temperature ranges of 100°C to 145°C. It is stable in beverages at pH values of 2.5 that have been retorted and processed using UHT (ultra high temperatures). It also is stable in baked products. Choline is easily incorporated into these foods and others as a powder. It is also more stable and less expensive than omega-3 fatty acids, yet has similar therapeutic benefits. Choline is an underappreciated and under-publicized nutrient when compared to omega-3s. pf

"Choline: Formulation for Cardiovascular Health, Brain and Liver Function Made Easy," Lucien Hernandez, business manager, nutrients, Balchem Corporation, lhernandez@balchem.com
—Summary by Richard F. Stier, Contributing Editor



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Wilbert Jones, Contributing Editor

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Asian-spiced Chicken in Wonton Cups with Vanilla Apricot Sauce pairs savory-sweet flavors such as soy sauce, onion and a selection of spices (basil, cumin, ginger, black pepper and garlic powder) with apricot jam, vanilla and "pumpkin pie spice."

There was a time when crab cakes, mini quiches, Buffalo wings (served with bleu cheese and a celery stick) and Swedish meatballs were considered fancy appetizers. Today, consumers' taste buds are more globally educated. Food manufacturers continue to respond by producing restaurant-quality products such as *spanakopita* (a Greek appetizer made of phyllo dough, baked with a stuffing of feta cheese, spinach and egg), Mexican-style chicken tamales and Thai beef satay with peanut sauce. These globally inspired appetizers can be found in the freezer section at most large grocery stores across America.

Educated Chefs

Both Bruce Ozga, dean of culinary education, and Jordan Fickess, director of communications, at Johnson & Wales University in Miami agree that there is great interest in global foods because of the popularity of television's Food Network, celebrity chefs and an increased enrollment in education programs at culinary colleges and universities. "Several of our students are in our degree programs because they want to start a second career," says Ozga. "Some have worked as lawyers, accountants and dietitians," he continues.

Johnson & Wales is considered one of the best culinary universities in the country and has campuses in Miami, Denver, Charlotte and Providence. Culinary nutrition, the study of food and culinary arts from a nutritional perspective, is one of the popular bachelor of science degree programs. "Our students learn how to take traditional recipes and re-make them healthy by reducing or removing fat, cholesterol, sodium, sugar and/or carbohydrates. But, the recipe must taste just as good as the original, traditional recipe. They are evaluated by the instructors and sometimes a panel of chefs," says Ozga. Another popular program at Johnson & Wales is the Foodservice Entrepreneurship, which is offered at the Providence campus.

Ozga works at the Miami campus and has ongoing working relationships with food manufacturers and restaurants—everything from recipe development to food and wine pairing programs. "Because we are located in Miami, we have access to some of the freshest and most exotic fruits and vegetables. Miami is an international city with many cultural and culinary influences," he says.

Re-inventing Simple Foods

Four Stars International in Chicago produces a line of appetizers it calls "updated classics" which include: The Philly Cheese Steak Egg Roll (2.5oz, made of thinly sliced Philly-style beef, onions, green bell peppers and cheddar cheese in an egg roll wrap), Buffalo Chicken Rangoon (1.25oz, made of zesty flavored Buffalo chicken wrapped in a wonton skin



These Southwest Salsa Bites with pepper jack cheese, brown rice, sour cream and crushed tortilla chips dovetail well with consumer interest in Southwestern and Latin cuisines.

PHOTO COURTESY OF USA RICE FEDERATION

with a crispy fried chicken coating), Mini Wisconsin Brat in a Blanket (1.25oz, made of bratwurst wrapped in a flaky pastry with a reduction of caramelized onions, sauerkraut and mustard) and Sausage and Mozzarella Pizza Bite (1oz, mini sausage pizza with a specialty-crafted, authentic, crispy yet moist pizza crust made with olive oil).

Wings Around the World, also in Chicago, is an independently owned carryout concept. There are 32 wing flavors on the menu; they are neither made with breading nor batter-dipped. Unique flavors include Mexican Chipotle, Italian Parmesan-garlic, Fire Jerk from Jamaica and Curry-Masala from India. There is even a Canadian-inspired Maple Twist Flavor.

Merging Trends

Corn Maiden in California has taken basic Mexican appetizers, re-invented them with a gourmet touch and called it Euro-Mex Cuisine. The line of frozen products includes: Empanadas (made of goat cheese, sun-dried tomato and basil); Flautas (made of lime-cilantro chicken and green chile); Vegan Tamales (made of spinach, artichoke hearts, fresh corn and chipotle); and Dessert Tamales (made of Belgian chocolate, raspberries and caramelized walnuts). Pascal Dropsy, president of Corn Maiden, is a Belgian-born chef who founded the company 13 years ago. He was excited to learn about Mexican cuisine and culture. "I like to call it *kismet*, since those two regions of the world inspired me the most—Europe and Mexico," he says. Corn Maiden products are sold at Trader Joe's, Albertson's Supermarkets, Glenson's and Bristol Farms Markets. Additionally, they can be purchased via Williams-Sonoma and Dean & Deluca catalogues.

Another growing food trend is the merging of Asian and South American cuisines. This unique blend yields wonder-

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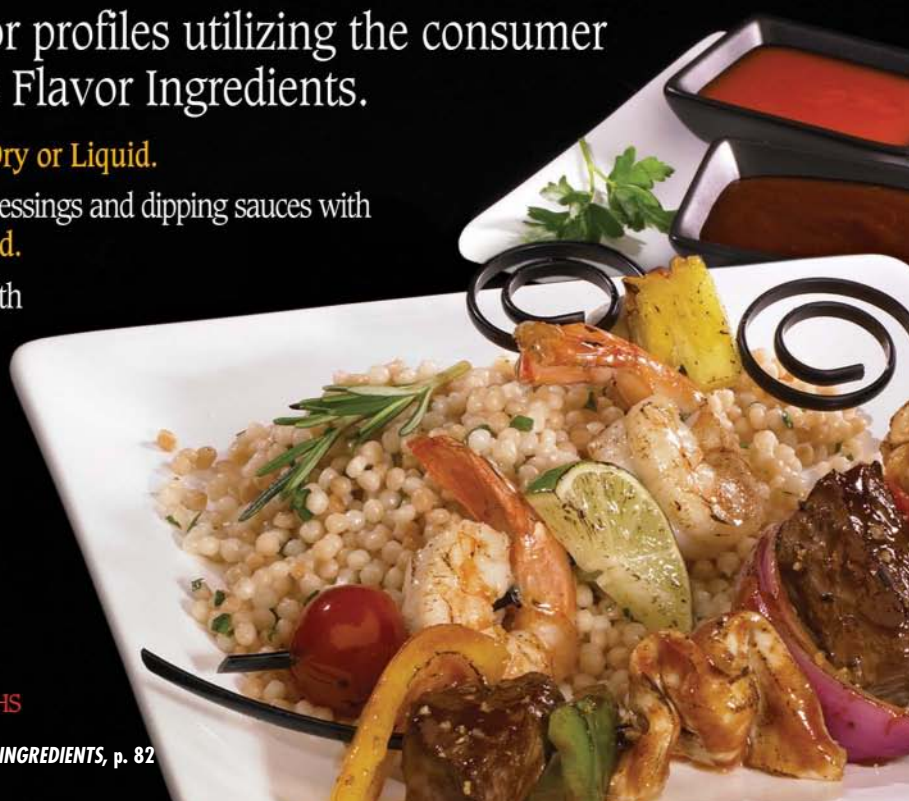
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Food manufacturers provide appetizers like coconut shrimp and Thai Chicken Satay with Peanut Sauce in the freezer section of grocery stores. These items attempt to mimic the quality of restaurant fare.

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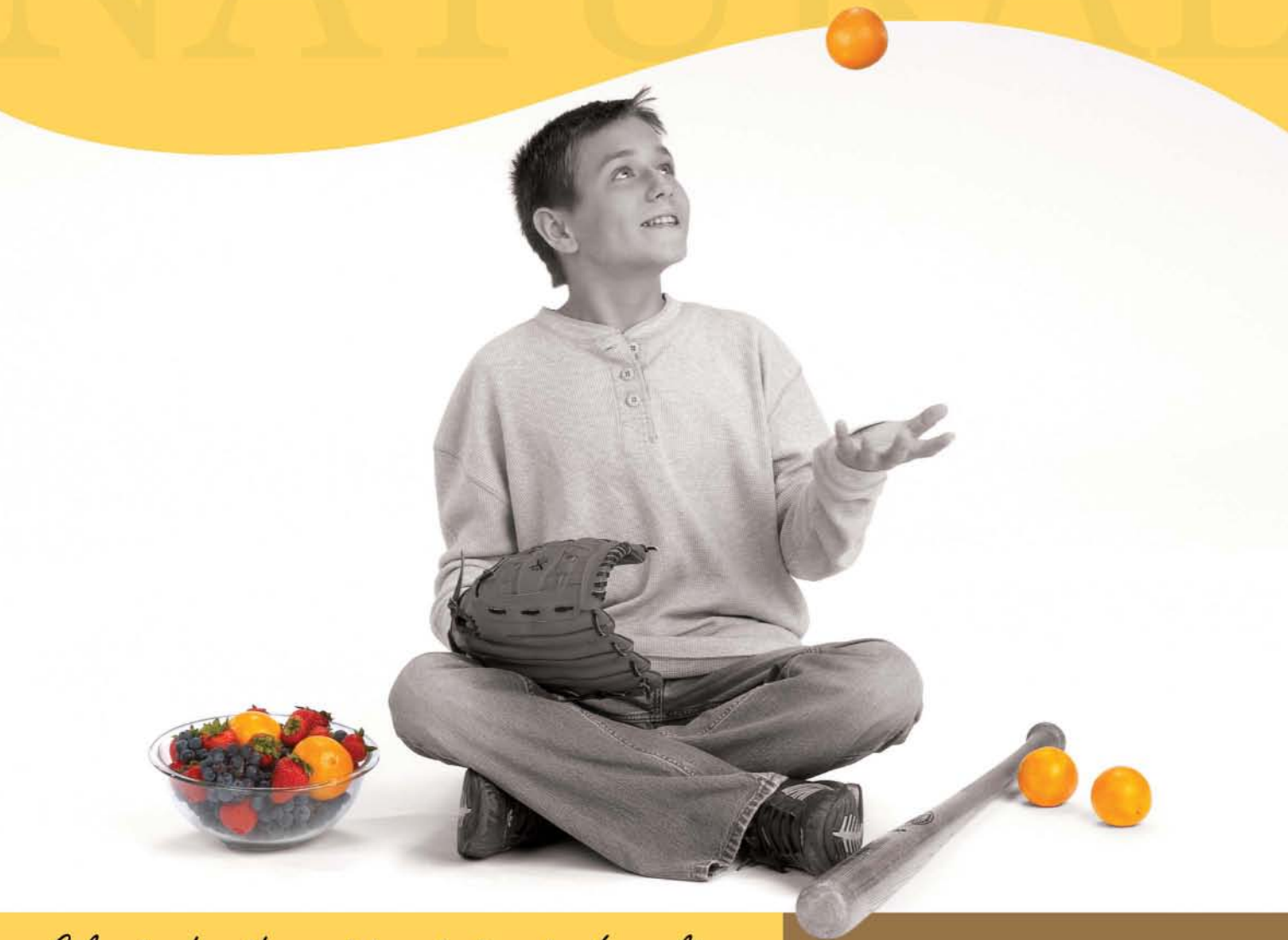
ful, tasty appetizers and entrées. SushiSamba, with locations in Miami, New York, Chicago, Rio and Tel Aviv, blends Japanese and Brazilian cuisine, music and design décor in its restaurants. One of the popular appetizers on its Miami menu is the Pastel (a crispy *empanada* filled with shiitake mushroom, manchego and Cabrales cheeses). It is served with a walnut corn salsa. SushiSamba is one of the first restaurants in the world to have a sushi/*seviche* bar. *Seviche*, also spelled *ceviche*, is a Latin American dish of raw fish marinated in citrus juice (which cooks it), onions, tomatoes and chilies—and sometimes flavored with cilantro. There is a popular menu item called Tuna Sashimi Seviche, which is made from fresh tuna served with grapefruit juice, red jalapeño pepper and almonds.

The Perfect Bit Company in Los Angeles manufactures a line of upscale frozen pastry appetizers. Flavors include Caramelized Onion & Feta Cheese, Roasted Jalapeño & Green Chili, Cilantro Pesto & Corn, Smoked Salmon & Chive and Basil Pesto & Gorgonzola. The products are packed and shipped to grocery stores frozen and uncooked in an oven-safe disposable baking tray.

What's Next

Philippe Ruiz, executive chef de cuisine at the Palm D'Or Restaurant inside the Biltmore Hotel in Coral Gables, Florida, thinks chefs and food manufacturers must continue to raise the bar by coming up with creative menus and food products to please and educate consumers. "The food industry is very competitive in both the restaurant and food product retail sectors. Our customers are well-traveled, and they know a lot about food these days," says chef Ruiz. Palm D'Or was recently named the best restaurant in South Florida by the Florida





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Restaurant and Lodging Association. Dennis Doucette, the Biltmore's general manager, says, "South Florida is one of America's liveliest and most competitive dining scenes. To go up against the best in Miami, Palm Beach, Fort Lauderdale and elsewhere and win is an extraordinary accomplishment."

One of chef Ruiz's signature menu items is Snow Crab and Heart of Palm Napoleon, Red Curry and Coconut Wasabi Tobiko, which is made of snow crab claws, lemon, coconut milk, chopped green, yellow and red bell peppers, mild red curry, Hawaiian heart of palm, annatto oil (yellowish/red oil made from the seeds and pulp of a tropical tree), balsamic vinegar and a touch of Tobiko caviar.

In order to stay ahead of the trends, the Biltmore offers its guests interactive culinary demonstration luncheons led by some of America's leading chefs. The Biltmore also has one of the country's most popular weekly Sunday brunches. Each week, 18 chefs oversee this culinary extravaganza that requires intense preparation and advance strategic planning. Some of the most creative appetizers can be found on the menu, including *ceviche* on ice, tapas with international flavor flair and over 60 other dishes with influences from around the world. pf

The author would like to thank The Biltmore Hotel in Coral Gables, Fla. (www.biltmorehotel.com), and the Greater Miami Convention and Visitors Bureau (www.miamiandbeaches.com), as their personnel were extremely helpful with this article.

Website Resources:

http://culinary.jwu.edu — Johnson & Wales University

www.cornmaidenfoods.com — Corn Maiden Foods

www.sushisamba.com — SushiSamba

www.ThePerfectBiteCo.com — The Perfect Bite Co.



Wilbert Jones is the president of Healthy Concepts, a food and beverage company that provides menu, recipe and product development consulting services. He has authored four cookbooks, most recently Smothered Southern Foods. *He attended Paris' École de Gastronomique Française Ritz-Escoffier and was a food scientist for Kraft General Foods. For more information, call 312-335-0031 or e-mail: wjhealthyconcept@aol.com.*



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On the National Menu

Maria Caranfa, Mintel



Spicy New Addition

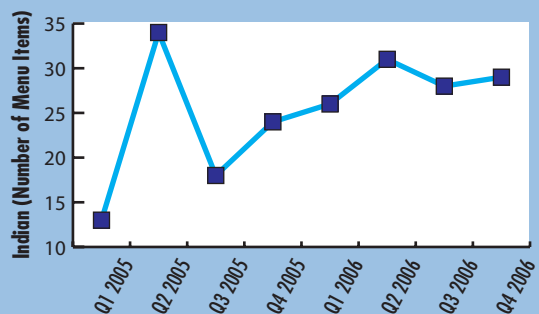
The restaurant menu has become a melting pot of cuisines from around the world. One cuisine making a move toward mainstream in the foodservice arena is Indian. According to Mintel Menu Insights, Indian cuisine experienced an 86% increase on the restaurant menu over the past two years and is projected to increase.

Many authentic Indian dishes and flavors are appearing on restaurant menus. Popular authentic Indian flavors on the menu include red, yellow and green curry, mango, cumin, coconut, coriander and pomegranate. Red Maple serves its classic Indian *Samosa* filled with green curry-spiced chicken, peas and sweet potato with mint-dill yogurt sauce.

Indian cuisine is also being embraced by the casual dining market. In the past year, several casual dining restaurant chains, such as California Pizza Kitchen, have added Indian flavors and dishes to their menus. California Pizza Kitchen combines spicy curry with cooling mango in its Mango Tandoori Pizza made with grilled Tandoori chicken, mango, mild onions, red peppers and mozzarella cheese on a spicy golden curry sauce topped with fresh cilantro and a sweet mango chili sauce. Legal Sea Foods serves an authentic south Indian soup called *Rasam* made with shrimp, scallops and scrod in a hot and sour tomato broth served with jasmine rice.

Indian Giving

Menu Items of Indian Cuisine
(575 Restaurants Tracked by Menu Insights)



Source: Mintel Menu Insights



PHOTO COURTESY OF MK OTTENS FLAVORS

The Green Machine

Green tea continues to be one of the "it" ingredients. Consumers can energize with a green tea soda in the morning, brush their teeth with green tea toothpaste in the afternoon and nourish the skin with green tea moisturizer in the evening. It is even possible to enjoy a green tea beverage in several favorite restaurants. Green tea experienced the most growth of all teas last year, finds Mintel Menu Insights. The popularity of green tea stems from its potential health benefits, ranging from cancer prevention to weight loss.

Green tea's popularity is also attributed to its delicate flavor, which serves as a perfect backdrop for an array of fruit flavors. A review of Mintel Menu Insights shows green tea is being paired with honeydew, pineapple, blackberry, pomegranate, papaya and kiwi flavors. Starbucks created a unique Blackberry Green Tea Blended Crème, and Cheebo mixes fresh Sencha Green Tea with sweet pineapple, papaya and tropical flowers. Jamba Juice blended its own Tahiti Green Tea Smoothie with a combination of green tea, mangos, lemonade, orange juice, orange sherbet, non-fat frozen yogurt and ice for a refreshing pick-me-up.



Say Cheese!

Cheese remains one of the most popular ingredients on the menu. Cheese is the fifth most popular ingredient on menus, says Mintel Menu Insights, and can be found in over 19,000 menu items. Cheese ingredients also continue to show steady growth. From sandwiches to gelato, the number of menu items featuring a cheese ingredient grew 13% from 1Q 2005 to 4Q 2006.

The Greatest of Cheese

Top 15 Cheese Ingredients, 4Q 2006



Source: Mintel Menu Insights

As the popularity of cheese continues to grow, more room is made on the menu for unique and specialty cheese varieties. Iberian is the cuisine to watch in the cheese category. Cheeses from Spain and Portugal are making a strong showing on menus, and Manchego could be the next "big cheese" on mainstream menus. Along with Manchego, also look out for Cabrales bleu, Bleu de Basque, Idiazabal and Tetilla cheese to make more appearances on U.S. restaurant menus. Cheebo serves Manchego with its Pressed Slow-Roasted Pork Sandwich. Oyster's puts a Spanish twist on its Grilled Red Pear Salad by adding Spanish sherry vinaigrette, Cabrales bleu cheese and Marcona almonds.



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Happy Hour with a Boost

What would cocktail menus be without the martini? The beverage has allowed coffee and tea to move onto the cocktail menu with ease. The espresso martini is the third most-popular martini flavor on the menu, according to a Mintel search. Coffee is also incorporated into other forms of the cocktail, including Tiramisu martinis. These pack both high flavor and a jolt of caffeine. Houlihan's shakes its Espresso Martini with Stoli® Vanil vodka, Kahlua, espresso, cream and chocolate shavings. The Rattlesnake Club uses coffee to create its Diablo martini, infused with orange, cinnamon, clove, coffee beans, coffee and whipped cream.

Not So Tini

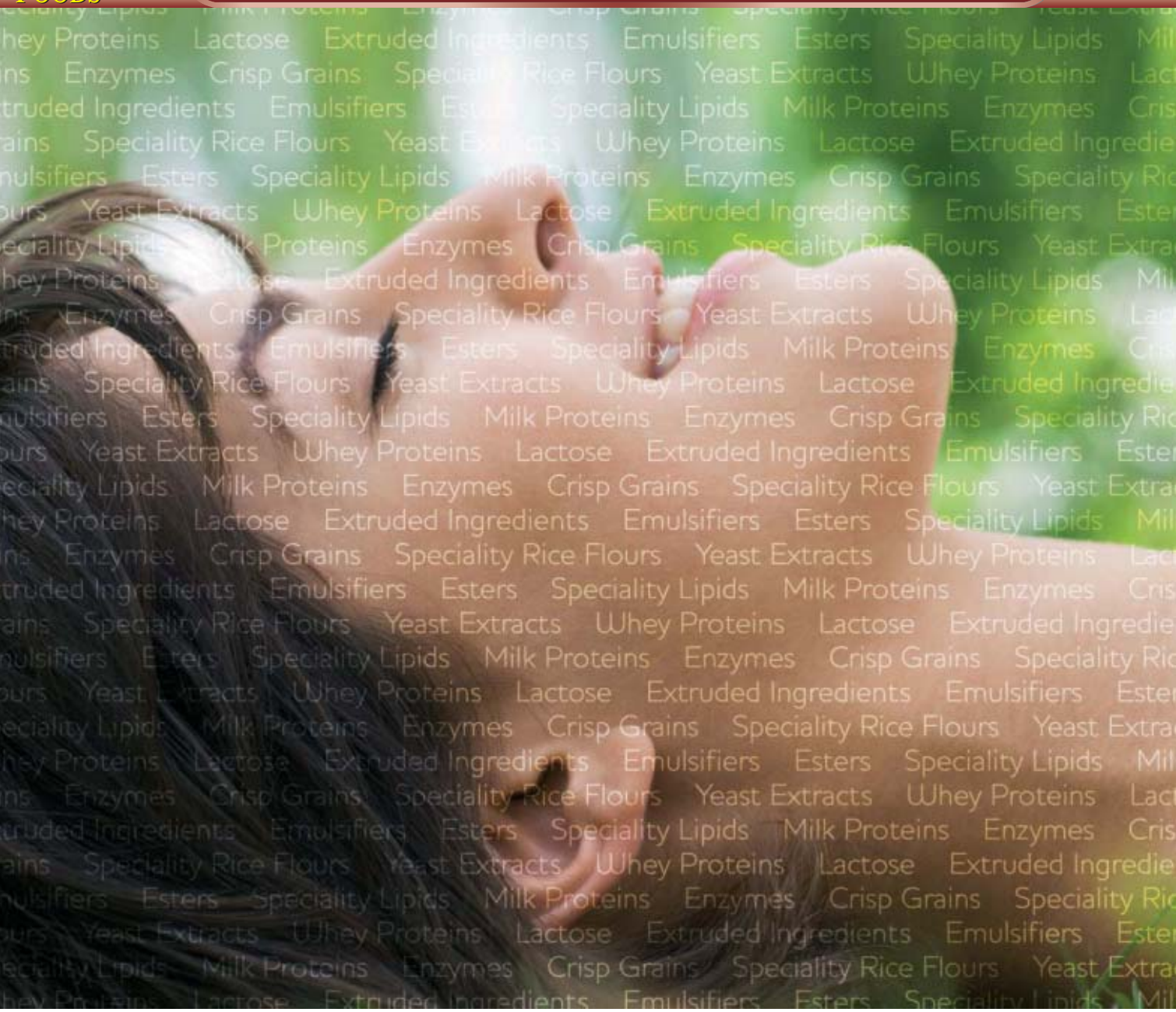
Top 10 Martini Flavors, Q4 2006

Flavor	Number of Menu Items
Apple	21
Chocolate	14
Espresso	11
Raspberry	9
Key lime	8
Sour apple	7
Lemon	7
Caramel and apple	6
Peach	6
Orange	6

Source: Mintel Menu Insights

Tea is one of the most popular new non-alcoholic ingredients being embraced by mixologists. Mintel Menu Insights finds popular teas used in martinis include sweet tea, green tea, chai tea and chamomile tea. Tea adds a refreshing, clean sensation to martinis, while providing a small dose of antioxidants. The Rattlesnake Club created a T-Martini infused with mint, chamomile tea and hibiscus. Rialto Restaurant blends Chai liquor and Absolut vanilla with a splash of white Crème de Cacao to create a Vanilla Chai Mar-Tea-ni. Front Page News gives a Southern classic a contemporary spin by combining sweet tea, Smirnoff orange and fresh lemon juice with a sugar rim for its Sweet Tea Martini. pf





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Promoting Safe and Nutritious

Congress, the FDA and USDA have created a changing regulatory environment for food marketers. Here is a look at some of the public policy issues involved.

Mark Hostetler, Blackwell Sanders LLP

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"The proposal, in reality, is designed to protect children from the weaknesses of their parents—and the parents from the wailing insistence of their children. That, traditionally, is one of the roles of a governess—if you can afford one. It is not a proper role of government" (*Washington Post* editorial, March 1, 1978).

No one who reads the newspaper or listens to the evening news would suggest that their diets could not benefit from some changes—whether a "tweaking" or a major overhaul. The issues of obesity, dental caries, "empty calories" and the sentimental favorite of "developing good eating habits" remain topics of concern to most Americans. However, there is no uniform understanding or agreed-upon plan to improve the quality of the "national diet." Bona fide efforts by producers to develop new products or marketing approaches to address dietary or lifestyle shortcomings are as likely to be publicly criticized as they are to be praised. A number of regulatory agencies possess the legal authority to regulate the food industry with one or more weapons from their legal arsenal.

While the origin of the FDA may have been limited to concerns for "safe" food, by the 1950s, FDA was giving "guidance to industry," and today CFSAN clearly articulates that its charge is to ensure that food is "safe, nutritious and wholesome," including "promot(ing) sound nutrition" (Inside FDA: Center for Food Safety and Applied Nutrition; January 1998). In 1980, FDA published a form of nutrition regulation with its fortification policy (21 CFR 104.20), and Congress established nutrition (and safety) standards for infant diets with passage of the Infant Formula Act.

Originally, the FDA may have limited its concerns to helping to assure "safe" food; however, today CFSAN articulates that its charge is to ensure that food is "safe, nutritious and wholesome" including "promot(ing) sound nutrition."

FDA's fortification policy protects against misleading labeling and, at best, represents an indirect approach to nutritional goal-setting: "Indiscriminate fortification of foods could lead to confusion about the necessity or propriety of food fortification. It could mislead consumers about the overall nutritional value of various kinds of foods and could lead to potentially serious health problems" (45 Federal Register 6322, Jan. 25, 1980, as amended 58 FR 2228, Jan. 6, 1993). However, some experts in the field of nutrition regard the fortification policy as ". . . (a) significant obstacle to rational fortification of foods, because of its 'wholesale' condemnation of certain classes of foods as inappropriate vehicles for delivering nutrients to target populations" (Richard C. Theuer, comment to FDA Dkt. No. 98N-0359). Standards of identity represent a vehicle for FDA to estab-

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The FDA has chosen to withhold certain important nutrition information on labels with the theory that adult caregivers (to children under four) might misinterpret or misuse the information.

lish the nutritional value of foods through ingredient selection, but as the agency opines, ". . . standards of identity are not established because a product is consumed in large volumes or for consumer safety or confidence but are established to promote honesty and fair dealing in the interest of consumers" (Final Rule: Bottled Water: Dkt. No. 88P-0030).

While there have been exceptions, FDA's philosophical approach to promoting wholesomeness has been to focus on total dietary concerns rather than labeling individual foods as "good or bad"(Comments by James S. Benson, acting commissioner, March 7, 1990; and "Tips for the Savvy Supplement User: Making Informed Decisions and Evaluating Information," CFSAN, January 2002). Early regulatory efforts by FDA to identify and promote "better for you" foods and key nutrients were legislatively limited to the selection of nutrients for the Information Panel—now the Nutrition Facts panel. An individual ingredient's importance in the diet was signified by the order in which it was listed on the food label or not at all. At the same time, FDA chose to withhold certain important nutrition information on the theory that adult caregivers (to children under four) might misinterpret or misuse that information. FDA actively resisted any producer's claim for a dietary advantage that went any further than a generalized claim for appropriateness of the food to an overall balanced meal or daily diet.

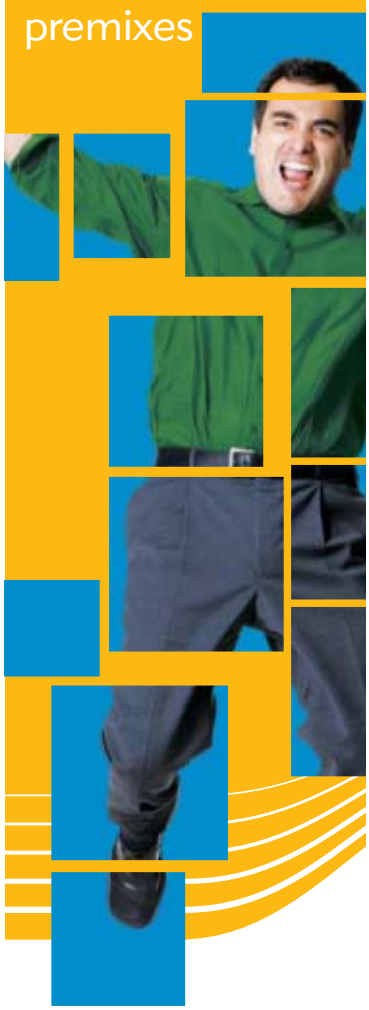
To its credit, although FDA may have been dragged kicking and screaming by Congress, the passage of the Nutritional Labeling and Education Act and the Dietary Supplement Health and Education Act recognizes the positive effect of advertising, label claims, marketing strategies and the role of individual foods in promoting health and good nutrition. (This is opposed to merely "avoiding misleading claims.") The FDA is implementing a labeling system that gives consumers timely access to helpful information if they want assistance in determining the nutritional value and dietary utility of packaged foods.

If we consider the role of the county extension agent, which provided farm families with information on good nutrition, the USDA has been involved in a "national diet" for quite a long time. This history, plus the essential role of USDA in farm policy, places USDA in an active advisory role.

MyPyramid (the 2005 version of the U.S. food pyramid) is only the latest and most obvious example of direct governmental involvement in the selection of individual foods and promotion of the nutritional goals expressed in the "Dietary Guidelines for Americans 2005" report. However, merely drawing attention to the categories of foods

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The authority granted to USDA in school nutrition programs is real, broad and well-funded. It represents at least one meal a day for millions of children and two meals for some.

PHOTO COURTESY USDA/KENNETH HAMMOND

to be limited and highlighting the categories of foods to be encouraged may be insufficient for some critics if MyPyramid continues to include foods which, although desirable and good-tasting, are not essential to good health and do not affirmatively contribute to the desired end. Milk, the consumption of which is favored by MyPyramid in the National School Lunch Program and promoted over the consumption of "competitive" beverages, is considered by some to be "another step in the wrong direction," as the recommended daily consumption adds 300 calories, falls short of medical support for disease prevention and is not an option for lactose-intolerant individuals (*Food Pyramids*, Harvard School of Public Health, 2007).

Far more than dietary recommendations, the authority granted to USDA in the school nutrition programs is real, broad and well-funded. Representing the content of at least one meal a day for millions of children and two meals for some, the School Breakfast Program and the National School Lunch Program are often targeted for criticism as not being good examples of a wholesome diet or worse—being significant contributors to an obesity problem among children.

Participating schools must provide "nutritious and well-balanced meals" at the eating occasions listed and meet specific "nutrition standards" by age group—all based upon the most current Dietary Guidelines (7 CFR 210). The regulations define foods of "minimal nutritional value" (generally less than 5% of eight nutrients per 100 calories) and prohibit their sale in "food service areas during the lunch periods." Sales of "competitive foods" (non-program foods which are



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not foods of "minimal nutritional value") are discretionary to the school, but regulations require that all income derived from their sale be reinvested in the school. Some "non-program" foods could be part of a generally wholesome diet but are not offered at certain schools because they compete for space in a student's stomach. For example, orange juice, considered a healthy beverage by many, must be sold outside the foodservice areas of the school because it could displace milk as the desired beverage.

The Government Accountability Office (GAO) reports that 99% of high schools, 97% of middle schools and 83% of elementary schools have vending machines, school stores or snack bars (GAO-05-563 "School Meal Program").



One 20g pouch of Quaker Granola Bites contains 90 calories, 0g of trans fat and, with 7% of the Daily Value for fiber, features the claim it is a "Good source of fiber per serving." The product is promoted as a healthy snack option for children.

In addition, while many states are content with the scope of the USDA rules, 28 impose additional restrictions. Just recently, Senator Tom Harkin re-introduced the Child Nutrition Promotion and School Lunch Protection Act (S. 2592) to amend the National School Lunch Act, to both update the definition of "minimal nutritional value" and to further limit the times and areas of the school in which competitive foods can be sold (see also: S. 2894, the Prevention of Childhood Obesity Act, 2004).

Through its various authorities, USDA has the ability to not only influence dietary decisions, but it can command dietary choices by limiting the availability of "less wholesome" alternatives.

Promotional Considerations

The Federal Trade Commission (FTC) has contributed to the promotion of better dietary choices through its authority to prohibit "unfair" advertising practices. Few would dispute the conclusions of the recent Institute of Medicine's (IOM) report to Congress on the impact of advertising on children.

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The FTC has shown its willingness to not only regulate the timing and content of advertisements, but has from time to time considered regulations to compel the disclosure of certain qualifying or corrective messages. The FTC is limited in its ability to develop forward-looking remedies by the statutory requirement that it must first find an unfair or deceptive practice. The Commission does not have the authority to compel advertising of "wholesome" foods unless as "corrective advertising" or as an artfully crafted means to correct an industry practice of deceptive or unfair advertising.

A public notice in 2006 that requested information on the food industry's activities targeting children seems to suggest that the FTC still suspects sinister motives in the industry's marketing techniques.

Two of the elements of the FTC's so-called "Kid-Vid" proposal of the mid-1970s attempted to regulate advertising to children based on the nutritional worth of the food advertised. They banned ads for foods contributing to cavities in children and required a "balancing" message in ads for highly sugared food products. While the proposal met with substantial criticism from industry and Congress—to the extent of removing the FTC's authority to regulate "unfair" advertising for a time—the FTC continues to probe and consider what interventions may be available under its current authority.

A public notice in 2006 that requested information on the food industry's activities targeting children seems to suggest that the FTC is still interested in the motives behind some of its marketing techniques. The FTC seeks comment on how "food and beverage companies record and maintain information about marketing activities and expenditures to children and adolescents" (e.g., whether they record and maintain market-



ing expenditure information based on product category, brand, specific product, etc., and how long they keep marketing information) (71 Federal Register 10535, March 1, 2006). In fairness, it should be pointed out that the FTC has not singled out the food industry for rulemaking. The commission has targeted other industries marketing to children 13 and under with regulations adopted under the authority of the Telephone Disclosure and Dispute Resolution Act and the Children's Online Privacy Protection Act (COPPA) (see: 16 CFR 308 and 16 CFR 312).

When all is said and done, pity the poor ad agency copywriter who is charged with creating the same appeal for orange juice, a whole-wheat cracker and a banana as for a soft drink, a bag of potato chips and a candy bar. Nevertheless, leading marketers are recognizing that self-regulation may be the best, if not only, means to avoid stricter governmental regulation of nutrition. Along with former President Clinton and the American Heart Association, companies have entered into agreements to discuss limiting the sales of soft drinks in schools or to develop guidelines to limit the amount of fat, sugar and sodium in snack foods available in schools. Joint measures undertaken as the Children's Food and Beverage Advertising Initiative along with the Childrens' Advertising Review Unit (a part of the National Advertising Division of the Better Business Bureau, one of the most effective industry self-regulatory bodies in operation) to "promote healthy dietary choices and lifestyle" portend the possibility of a reasoned approach to the obvious problem of a sound nutrition policy grounded in good science and appetite appeal.

The various regulatory agencies have been given, and have already exercised, authority to affect parts of a "national diet" contributing to good health and good eating. Unfortunately, the legislative authority to prohibit "misleading" or "unfair" does not translate readily to the authority to discourage "a poor choice" or to promote a "better choice." It falls far short of the authority to compel kids to "eat your vegetables, because we know what is best for you." Recently, the IOM submitted to Congress its "offer this, avoid that" recommendations for foods sold in competition with government-supported school lunch programs. Although immediately characterized by Senator Harkin as "for the first time, we have gold-standard recommendations," it is too early to assess why the IOM recommendations are a dramatic improvement over the current Dietary Guidelines. A number of marketing companies, trade organizations and interested individuals have expressed a willingness to address issues of good health and good eating. Perhaps if we could first reach consensus whether the means to achieve good nutritional goals can be "advisory" or must be "mandatory," it would be easier to defer to these expert resources to help develop what those nutritional goals should be and where they should be applied. Pf



Mark Hostetler is an attorney at Blackwell Sanders LLP. Experienced in advising consumer product companies and focusing primarily in the food industry, he can be reached at Mhostetler@blackwellsanders.com.

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A Sporting Attitude

Research drives an increasing role for whey protein in sports nutrition.

Greg Miller, Dairy Management Inc.

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Sports nutrition food and beverage formulators can benefit from new research on the nutrition and functionality of whey ingredients to build the next generation of sports nutrition bars and beverages with broad appeal. This category is increasingly important to food and beverage manufacturers, as 31 million Americans use a sports food or beverage "every time" they are active, according to a 2007 report from Mintel International Group Ltd.

To satisfy that demand, manufacturers are developing sports foods and beverages designed to increase energy, enhance performance and build muscle. As they do, they are finding that whey protein is a perfect fit for everything from clear beverages to nutrition bars. One reason is whey protein's nutritional quality and the health benefits emerging from research funded by America's dairy farmers. Another reason is whey protein's expanding functionality, which makes it ideal for use in varied sports nutrition products.

Science is confirming what body-builders have told one another for years—namely, that consuming whey protein appears to positively affect muscle synthesis, body composition and physical performance. What follows is the latest research and thinking on whey protein and nutrition.

Muscle Growth

Whey protein contains all of the essential amino acids in the proportions that the body requires for building muscle. In addition, its amino acid composition is not unlike that of skeletal muscle, providing essential amino acids for building and maintaining muscle. Whey protein also offers more of the muscle-building branched chain amino acids (BCAAs) than other proteins (26g of BCAAs leucine, isoleucine and valine per 100g whey protein). Leucine is a unique amino acid that has been shown to independently stimulate muscle protein synthesis.

According to a 2007 Mintel International report, 31 million Americans say they use a sports food or beverage "every time" they are active.

Recent clinical studies have shown that whey protein delivers key nutritional benefits such as independently stimulating muscle protein synthesis; stimulating protein synthesis better than carbohydrates alone; and augmenting new muscle protein synthesis after resistance exercise. For example, Stuart Phillips, Ph.D., McMaster University, Ontario, looked at the short-term effect of dairy and soy proteins on muscle accretion in conjunction with exercise. Eight healthy young men consumed 18g of either milk protein or soy protein (in liquid form, as either skim milk or a soy beverage) after lifting weights. Muscle accretion was greater following milk consumption (Phillips, SM, et al. 2005. *J Am Coll Nutr.* 24:134S-139S).

This short-term benefit may carry over into muscle mass gains over the long term. In the same published research, Phillips also studied 54 novice male weightlifters over 12 weeks of a weight-training program during which they doubled their strength. After each of their workouts, the young men consumed two beverages containing either milk protein (skim milk), soy protein or an energy-matched amount of carbohydrate after exercise. "The milk group saw greater



lean mass accretion and greater fat mass loss than either the soy or carbohydrate groups," Phillips says.

The most recent research by Phillips and his team found that young men who drank a glass of skim milk after weightlifting built more muscle mass than those who drank a glass of a soy beverage, experiencing 34% more muscle protein synthesis with milk than with soy (Wilkinson, SB, et al. 2007. *Am. J. Clinical Nutrition*, 85:1031-1040). Findings from previous long-term studies of adults (10 weeks) conducted in 2003 and 2004 suggested a trend toward greater gains in lean body mass with dairy protein (whey, milk) intake after a resistance exercise training program, as compared to consumption of a carbohydrate beverage alone. (Chromiak, et al. 2004. *Nutrition*, 20:420-7) and (Rankin, JW, et al. 2004. *J Am Coll Nutr.* 23:322-30).

Whey protein supports muscle synthesis, whether it is ingested before or after training, according to Matt Pikosky, Ph.D., R.D., director of research transfer, Dairy Management Inc.™ (DMI). "High-intensity exercise, such as resistance training, increases the breakdown of muscle. Ingesting protein or amino acids as close to the exercise bout as possible will cause an increase in muscle protein synthesis that is greater than this increase in breakdown, which, if repeated over time, can lead to an increase in muscle mass," notes Pikosky. Simple proximity to exercise time may be the key, as research has shown no difference in effect whether the whey protein was ingested before training or immediately after.

In a study by Crib, PJ, et al., resistance-trained men were given whey isolate, carbohydrate, creatine or a combination of creatine and whey supplement. The whey-supplemented groups experienced double the gain in fat-free mass than males who were given the carbohydrate supplement.

Whey protein provides more muscle-building amino acids (26g of BCAAs, leucine, isoleucine and valine per 100g whey protein) than other proteins.

Body Composition

Body composition is the relative proportion of body fat to fat-free mass (organs, bone and muscle tissue) in the human body. Scientific evidence is growing to suggest that whey protein helps promote better body composition, particularly when combined with resistance exercise. That is because—thanks in part to its BCAAs—whey protein not only promotes muscle growth but also limits muscle loss.

High levels of amino acids must be present in the blood to stimulate muscle protein synthesis and maximize the stimulus of resistance training. Consuming whey protein appears to provide the significant increase in blood amino acid concentrations that encourage muscle protein synthesis. At the same time, whey is a rich source of cysteine. Supplementation with cysteine-rich compounds has been shown to increase glutathione production (which governs changes in body composition), halting muscle protein breakdown and improving muscle strength and body composition during exercise training. Because whey is rapidly absorbed by the body, its amino acids and cysteine are easily assimilated.

In one study, four groups of resistance-trained men were given whey isolate, carbohydrate, creatine or a combination of creatine and whey supplement. After 11 weeks of resistance training, the whey-supplemented groups experienced double the gain in fat-free mass than males who were given the carbohydrate supplement. Muscle biopsies taken before and after training revealed that whey supplementation increased the size of some muscle fiber types by up to 543%, compared to carbohydrate supplementation (Cribb, PJ, et al. 2007. *Med Sci Sports Exerc.* 39:298-307).





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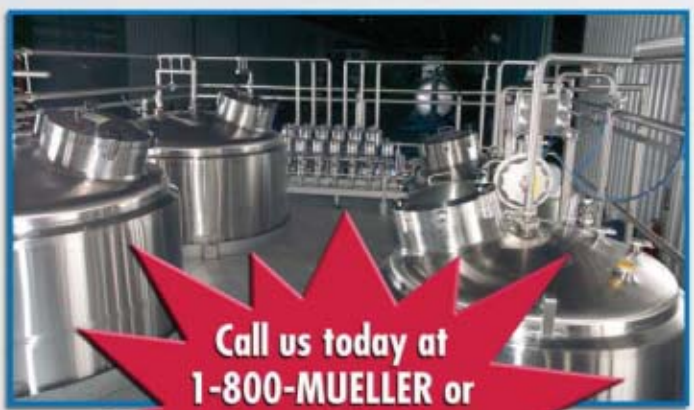
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See Food Master-*EQUIPMENT*, p. 120



"During storage, proteins interact with each other, creating disulfide bonds that reduce protein quality," explains Ted Labuza at the University of Minnesota. His group is conducting research on using whey hydrolysates to slow the hardening of nutrition bars.

PHOTO COURTESY OF DAIRY MANAGEMENT INC.

Enhanced Physical Performance

The BCAAs in whey protein also provide fuel for exercising muscles, help maintain blood glucose levels during exercise and assist in muscle repair and post-exercise recovery. These amino acids provide an energy source during endurance exercise that allows athletes to train more intensively for longer periods.

Whey protein is rich in arginine and lysine, amino acids that may increase the release of growth hormone, which is a stimulator of muscle development. In addition, bioactive compounds isolated from whey protein (e.g., lactoferrin, lactoferricin) may improve immune function and gastrointestinal health as well as reduce excess free radical production in athletes when intensive training compromises these systems.

Other emerging benefits of whey protein include blood pressure control, glycemic control, satiety and weight management, says Peter Huth, Ph.D., director of regulatory and research transfer, DMI. "Research suggests that intact whey protein at high levels may have some blood pressure-lowering effects," he notes. In addition, "Some preliminary epidemiological evidence shows that dairy protein appears to be involved in helping increase glucose control in individuals who are insulin resistant."

Whey protein's effects on food intake and satiety were reported by University of Toronto professor G. Harvey Anderson. He and his team gave healthy young men 200-calorie beverages containing about 45g of sweet whey protein an hour before a pizza meal. The whey protein beverage more effectively reduced the amount of pizza they consumed, compared to an equal amount of carbohydrates, egg protein or water control (Anderson, GH, et al. 2004. *The Journal of Nutrition*, 134:3011-15).

Functional Fit

Functionally, whey protein offers sports foods and beverages a clean flavor and solubility as well as emulsifying and gelling properties. DMI-funded research is focusing on whey ingredients with enhanced functionality. A national expert panel coordinated by DMI's National Dairy Foods Research Center Program is exploring the enhancement of whey protein's properties such as heat stability and optical clarity. All of these properties are important for functionality in clear sports beverages.

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At North Carolina State University, for example, researchers are looking at the factors that can influence the perception of astringency in high-acid beverages that contain whey protein. "It appears that salivary proteins and whey proteins aggregate and precipitate to varying degrees when combined, and the degrees of aggregation and precipitation are tied to the potential for astringency," explains Allen Foegeding, Ph.D., William Neal Reynolds distinguished professor, Department of Food Science, North Carolina State University. "Interestingly, astringency decreases as pH is lowered below pH 3.4, due to the decrease in attractive charge between the whey proteins and saliva proteins. Decreasing the net positive charge on whey proteins via modifications may help reduce astringency in acidic whey protein-fortified drinks," he says.

Researchers at the University of Wisconsin-Madison are focusing on whey protein isolates that have enhanced functionality such as high optical clarity, no-sediment formation and increased thermal stability. These functionalities will increase their usage in shelf-stable and refrigerated beverages.

"The advantage that whey proteins have is that they are one of the few proteins that stay clear in solution at an acidic pH," says Mark Etzel, Ph.D., professor of food science at the University of Wisconsin-Madison. "We are trying to understand how to incorporate whey protein isolates in acid beverages (pH 4.6 and below) while maintaining clear solutions without precipitates or sediment formation." Whey protein, if not denatured, is clear in solution at pH 4.6 and below.





At North Carolina State University, researchers are looking at factors influencing the perception of astringency in high-acid beverages with whey protein. Astringency decreases as pH is lowered below pH 3.4, due to the decrease in attractive charge between the whey proteins and saliva proteins.

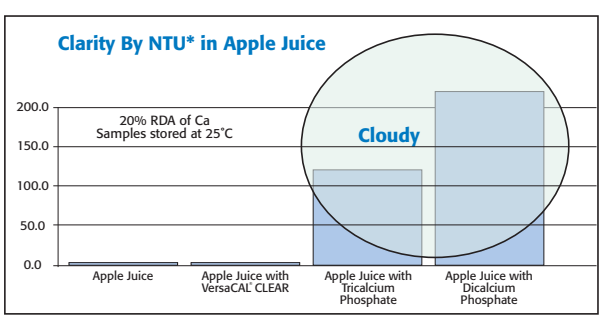
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See Food Master-*INGREDIENTS*, p. 106-107

Once heated, the protein may become cloudy and precipitate out of solution if the pH is too close to pH 4.6 and heat treatment is too harsh. "The heat treatment we are targeting is for hot fill conditions—190˚F for a few minutes. This type of beverage would be stable at room temperature," explains Etzel.

His research group is looking at whey protein isolates that provide 10% of the daily value for protein, focusing on pH and the addition of sugars and salts to beverages. "What we have found is that for whey protein isolate at a pH of 3.7 and below, it is relatively easy to obtain clear solutions. When we worked at a pH range of 3.8-4.0, we found this to be a critical range where we had to be more careful."

In the critical range of 3.8-4.0, Etzel found that there was an impact depending on what type of ingredient was added. The type of sugar, such as glucose, sucrose and high-fructose corn syrup was important, with sugar alcohols resulting in the clearest solutions. Addition of sodium, potassium and calcium salts decreased clarity, while addition of amino acids such as asparagine, proline and glutamine increased clarity. Thus, the selection of ingredients in the formulation of clear beverages containing whey protein isolate may be an important factor, especially in the pH range of 3.8-4.0.

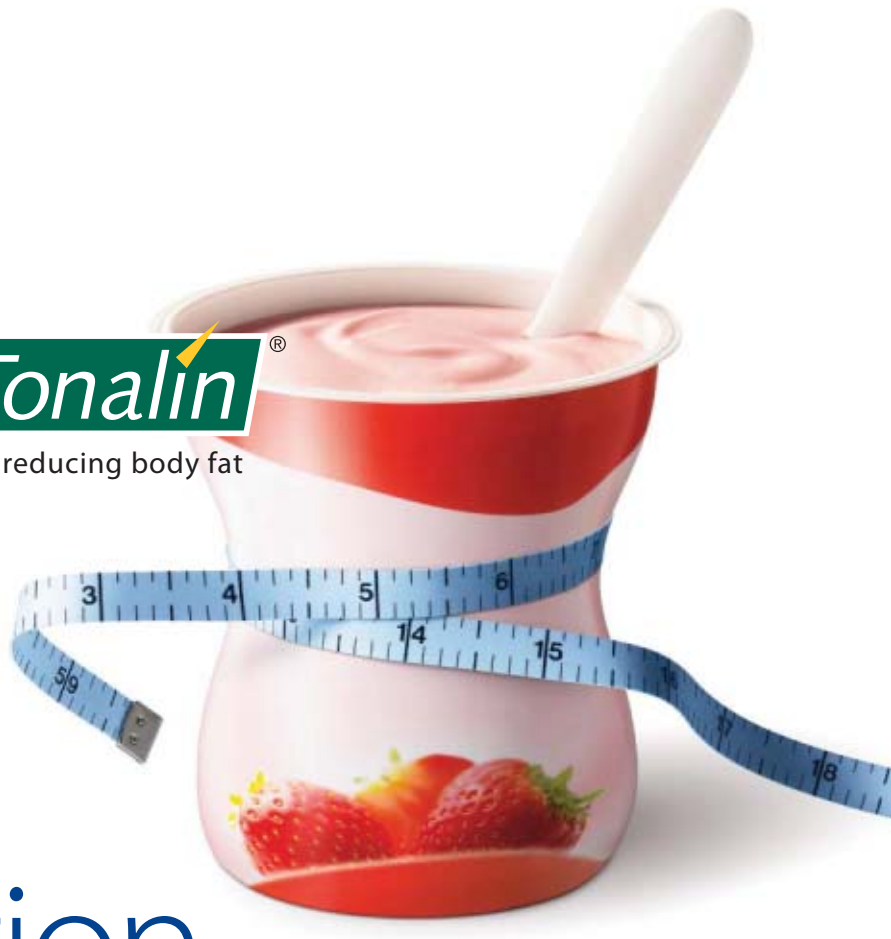
For active adults looking for foods to sustain them, energy bars can also be an appealing source of replenishment. To ensure product quality during shelflife, researchers at the University of Minnesota are investigating ways to preserve the soft texture of nutrition bars made with whey protein. "During storage, proteins interact with each other, creating disulfide bonds that reduce protein quality," explains Ted Labuza, Ph.D., professor of food science and engineering. His group is conducting research on using whey hydrolysates to slow the hardening of nutrition bars.

In addition, Labuza's group is studying the effect of the Maillard reaction when high-fructose corn syrup is used as a sweetener in sports nutrition bars. The glucose and fructose in high-fructose corn syrup react with protein, resulting in the Maillard reaction, which contributes to bar hardening. He found that switching to sucrose prevents this from occurring.

To learn more about whey protein from the dairy industry's leading source of product, ingredient and nutrition research and information, find prototype sports nutrition bar and beverage formulations or locate a dairy ingredient supplier, visit www.innovatewithdairy.com. pf

Greg Miller, Ph.D., M.A.C.N., is executive vice president, science and research with Dairy Management Inc.™, Rosemont, Ill.





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Formulating organic foods and beverages requires thoughtful deliberations. Understanding regulations and ingredient sourcing issues is a must.

Mary Mulry, Contributing Editor

Organic foods have become an integral sector in the food industry's ongoing strategy to crack the growing health and wellness market. Large retailers such as Target and Wal-Mart have announced that organic foods are a new core focus, while the 200 new products in Safeway's "O" brand racked up first year sales of $162 million, according to chairman and chief executive officer Steven Burd. New offerings by consumer-branded food companies such as Kellogg's and Bertolli have recently reached the market, and new organic entries in the food market arrive on shelves every week.

Yet, organic food sales at retail still only represent 3% of total retail sales in 2006, according to the Organic Trade Association's (OTA) "2007 Manufacturer Survey." If so, why is there such excitement about organic foods? This same survey noted that sales grew 22.1% in 2006—a very impressive number compared to the relatively anemic overall growth of retail food sales. Organic sales have notched 20% increases since 1990, and growth shows no signs of slowing. "These preliminary findings verify organic product sales to be a shining star in the marketplace, and we expect strong growth in 2007 as well," says Caren Wilcox, OTA's executive director.

This continued strong consumer demand has created unique opportunities for consumer-branded companies and retailers to develop new branded organic products, but it has also created unique challenges for formulators. New organic ingredients are coming to market, but the use of synthetic and non-organic ingredients is limited. Therefore, the product formulator must work with sometimes severe restrictions in ingredient choices. An understanding of the organic supply chain and the unique regulatory environment for organics is critical for supply security and success for organic products in the marketplace.

The Hain Celestial Group launched what it bills as "the first organic soups in a microwaveable bowl" under its Health Valley brand. Tomato Bisque is one of the line of USDA-certified organic soups that includes Black Bean, Minestrone and Lentil. The soups just have to be heated before being eaten and, depending on the variety, are touted as being a good source of vitamin C, fiber, protein and other nutrients.

A Process-based System

Organic is a processed-based system, which means that organic materials must be derived from crops that are grown according to strict agricultural practices. These practices do not allow the use of synthetic pesticides, herbicides or fertilizers for a period of three years; prohibit the use of genetically modified crops; and do not allow the use of sewage sludge on crops. In addition, the farm and the individual crop in production must be certified by a USDA-accredited certifier as using an acceptable organic handling plan.

Processed foods have additional restrictions. They must be manufactured in a certified facility; must not use prohibited processes such as irradiation; and the ingredients must be certified organic or be specifically allowed for use in organic foods. These substances are listed on the so-called "National List of Allowed Substances" in organic.

Labeling Regulations

There are essentially four product labeling schemes in organic, according to the USDA:



Organic Baked Apple Tarts, part of a Health Valley brand line of granola bars that includes other varieties such as Organic Raspberry Tarts and Organic Cherry Tarts, contain no trans fat, artificial flavors or chemicals, according to the company's website.

■ 100% Organic—must not contain any non-organic ingredients, exclusive of added water and salt.

■ Organic—must contain at least 95% organic ingredients, exclusive of added water and salt. May contain up to 5% of non-organic agricultural ingredients on 7CFR205.606 or allowed substances in 7CFR205.605.

■ Made with Organic Ingredients—must contain at least 70% organic ingredients, exclusive of added water and salt. May contain up to 30% of substances listed in 7CFR205.605 or 7CFR205.606.

■ Contains some organic ingredients—organic ingredients may be listed on the ingredient statement, but there must be no mention of organic on the principal display panel.

It is critical for formulators to keep these restrictions in mind, as sourcing and ordering "organic" ingredients is more complex than ordering conventional ingredients using an ingredient specification as a guide.

Agricultural vs. Non-agricultural

Substances used in organic are divided into agricultural materials and non-agricultural (processed) ingredients. These materials are treated separately in the regulations.

Agricultural materials are defined in the regulations as: "Any agricultural commodity or product, whether raw or processed, including any commodity or product derived from livestock that is marketed in the U.S. for human or livestock consumption." In other words, agricultural commodities such as corn, wheat, milk and meat are agricultural materials. If these products are commercially available, they must be used to formulate organic products. Only those items listed in 7CFR206.606 as non-organic agricultural materials not commercially available as organic may be used in organic foods as of June 9, 2007. This is a recent change in the regulation that must be noted by product developers. Prior to this date, determination of commercial availability of non-organic agricultural materials was performed by the certifier. Substances that are deemed to not be commercially available as organic must be petitioned to the National Organic Standards Board (NOSB) and then must be added to the list by the USDA before they may be used. Recently, many new substances such as natural colors, fish oil and fructo-oligosaccharides were proposed as additions to the list in order to meet the deadline.

Non-agricultural substances are defined in the regulation as: "A substance that is not a product of agriculture, such as a mineral or a bacterial culture that is used as an ingredient in an agricultural product. For the purposes of this part, a non-agricultural ingredient also includes any substance, such as gums, citric acid or pectin, that is extracted from, isolated from or a fraction of an agricultural product, so that the identity of the agricultural product is unrecognizable in the extract, isolate or fraction."

These substances, which include natural flavorings, are listed on 7CFR205.605 as natural and synthetic substances allowed for use in organic foods. These non-organic ingredients must meet the criteria that they are derived from crops that have been grown organically, so they must be from non-GMO crops and crops that have not used sewage sludge. All ingredients in a multi-ingredient formulation must be on the National List; therefore, carriers, flow agents and other processing aids must also comply with the organic regulations. These ingredient mixtures are often described as "organic-compatible" or "organic-compliant." It should be noted that when these materials become available in organic form, the organic form must be used. Many organic starches and gums, for example, are available in certified organic form, so they must be used in the product formulation as organic.

Supply Issues

Given the strict certification and regulations in an extremely competitive marketplace, it is imperative for product formulators to plan ahead when sourcing organic materials. "Organic sourcing is very different from conventional materials because it requires 12 to 18 months' advance planning to avoid spot buying on the open market," notes Bill Wolf of Wolf Demotte and Associates, an organic consultancy that is experienced with organic supply security and regulatory issues.

Most organic commodities are purchased under contracts for growing and production. This is due to the competitive supply environment and long lag period (three years) in converting conventional land to organic production. Because of the growth in the market, some products such as dairy products and meats have been in extremely short supply, as they are also dependent on the availability of organic feed for the animals. The dairy supply is expected to ease as more organic farms come on-line, but processed dairy products like butter and cheese will lag behind the milk availability, as these are secondary markets to fluid milk.

Other agricultural crops, such as yellow corn, have been affected by the burgeoning market for biodiesel. Farmers are getting more money to grow corn for biodiesel and thus have been less willing to switch to organic production. Both organic and conventional corn prices have risen rapidly in the last year as a result.

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Product developers should be aware of supply issues when developing new products. For example, organic peach salsa may be a great product concept, but the product may go out-of-stock or experience skyrocketing costs if a crop failure of organic peaches occurs. It often pays to diversify commodity supply from other hemispheres with some crops in order to hedge against such an occurrence.

International Issues

Ingredients may be sourced from many different countries, but it should be noted that the U.S., Europe, Japan and, most recently, Canada, have their own and often conflicting regulations. It is imperative to make sure that the ingredients that are sourced are certified by a USDA-accredited certifier (www.ams.usda.gov/nop/CertifyingAgents/Accredited.html) as compliant with the U.S. National Organic Program (NOP). Organic ingredients sourced from developing countries (such as China and India) should be scrutinized closely as well. Due to extensive environmental pollution, some ingredients may contain unacceptably high levels of residual or banned pesticides or heavy metals.

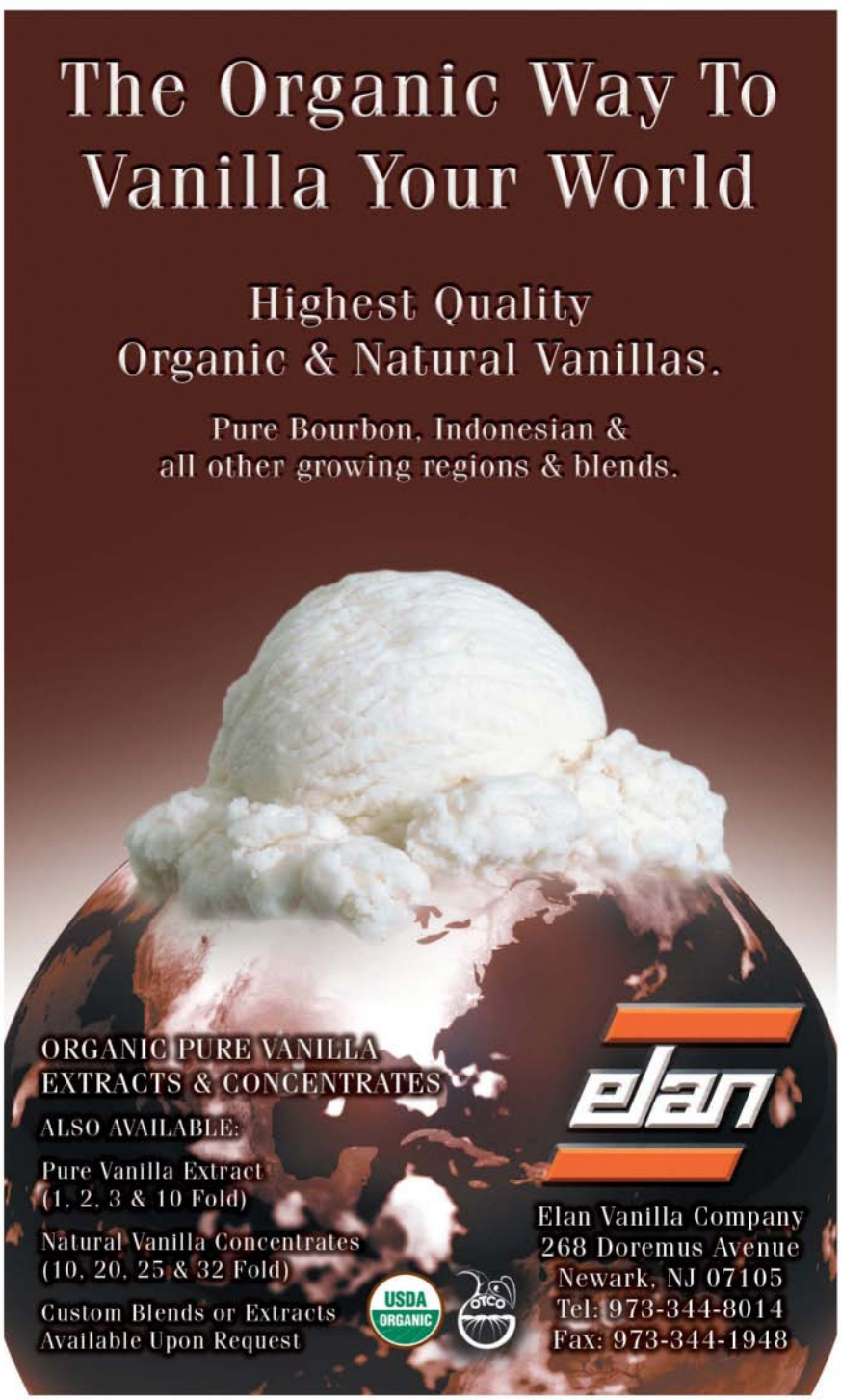
Food marketers should be aware that products developed for international markets or for export are subject to potentially conflicting regulations. "There are different compliance requirements to sell into each market, so you need to be aware of which markets the product may be sold into," Wolf states.

Sourcing Tips

This is a summary of some tips for product developers to help navigate the organic supply chain and help with organic sourcing:



Only "100% organic" or "organic" products, such as this Apple Cinnamon Muffin Mix by Dr. Oetker's Organics, may display the "USDA Organic" label.



■ Define the desired label—-"100% organic," "organic" or "made with organic"— only "100% organic" and "organic" products may carry the USDA Organic seal.

■ Assess your ingredient needs—agricultural versus non-agricultural.

■ Determine which ingredients are commercially available as organic.

■ Develop a three to five year growth plan to assess long-term supply and pricing needs for all ingredients.

■ Work with your purchasing department or ingredient brokers to contract for commodities, if possible.

■ Work with ingredient suppliers experienced in organic ingredients; experienced organic ingredient brokers may help with multiple ingredient needs.

■ Obtain copies of organic certificates and scrutinize specifications of ingredients to assure compliance with your specific needs—organic ingredients are often available in limited available specification types.

■ Verify "organic compliance" of any non-organic substances with your certifier.

■ Diversify supply as much as possible.

■ Use experienced regulatory advice for international sourcing and marketing.

■ Become familiar with the many available public and private organic resources and organizations.

■ Read the trade publications and note the new organic ingredients that are introduced to the market.

■ Attend trade shows such as the Institute of Food Technologists (IFT), the Natural Products Expo East, West SupplyExpo hosted by New Hope Communications and the OTA's All Things Organic trade show.

Resources

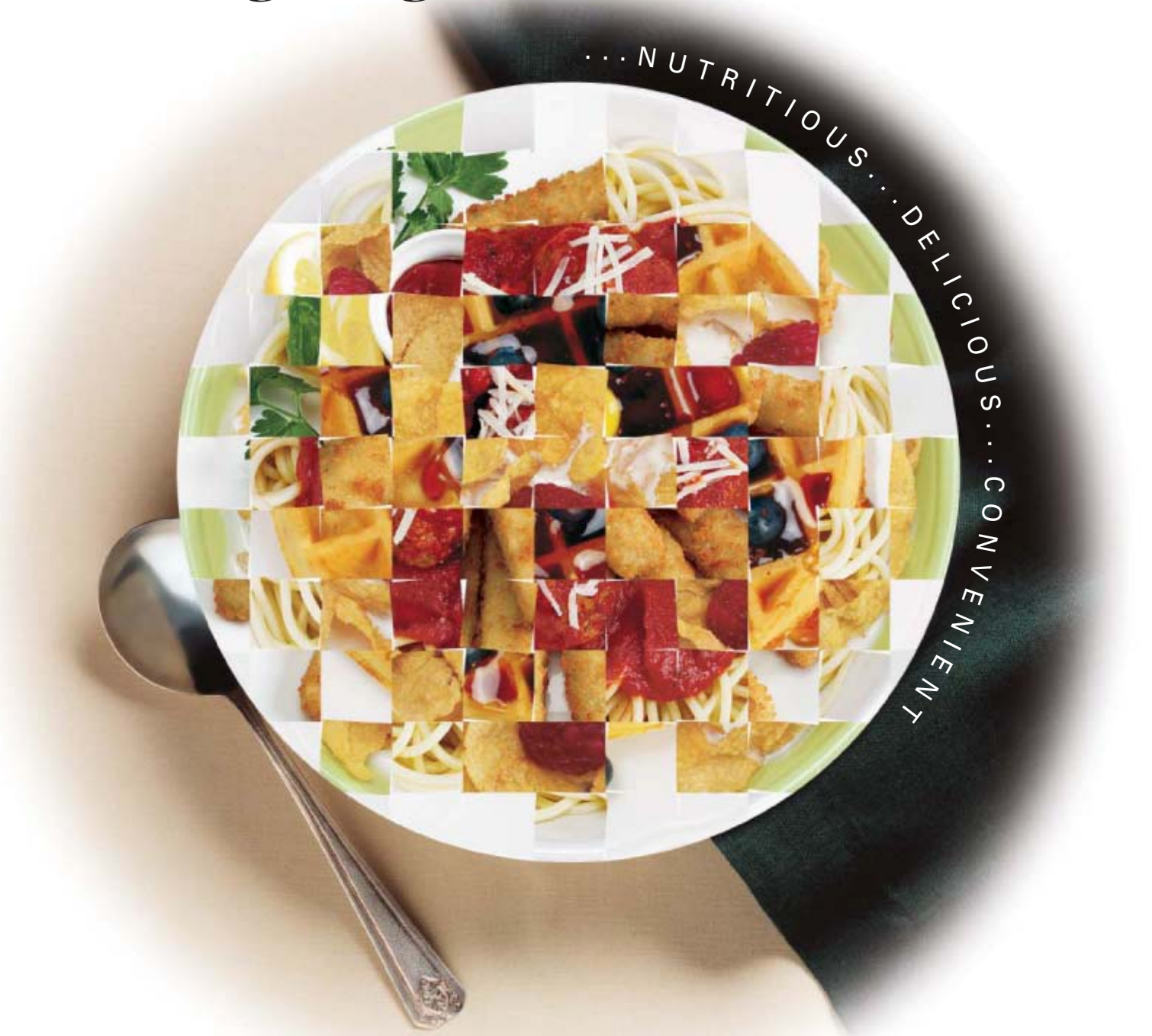
Most of the larger ingredient suppliers are becoming familiar with the issues involved in formulating organic products, so feel free to ask questions and use them as resources. Many of the existing ingredient sourcing manuals, such as the Food Master (www.foodmaster.com), provide separate listings of organic ingredients. Be sure to verify that the ingredients listed are NOP-compliant or compliant with the specific international regulations if marketing outside the U.S.

The Organic Pages Online (www.theorganicpages.com/topo/index.html) is a free resource provided by OTA. It is designed to provide users with a quick, easy way to find certified organic products, producers, ingredients, supplies and services offered by OTA members, as well as items of interest to the entire organic community. Food formulators should bookmark this as a favorite website, since it a valuable resource for all types of suppliers affiliated with the organic industry.

A new website announced in May 2007 by the OTA is How to Go Organic (www.how-



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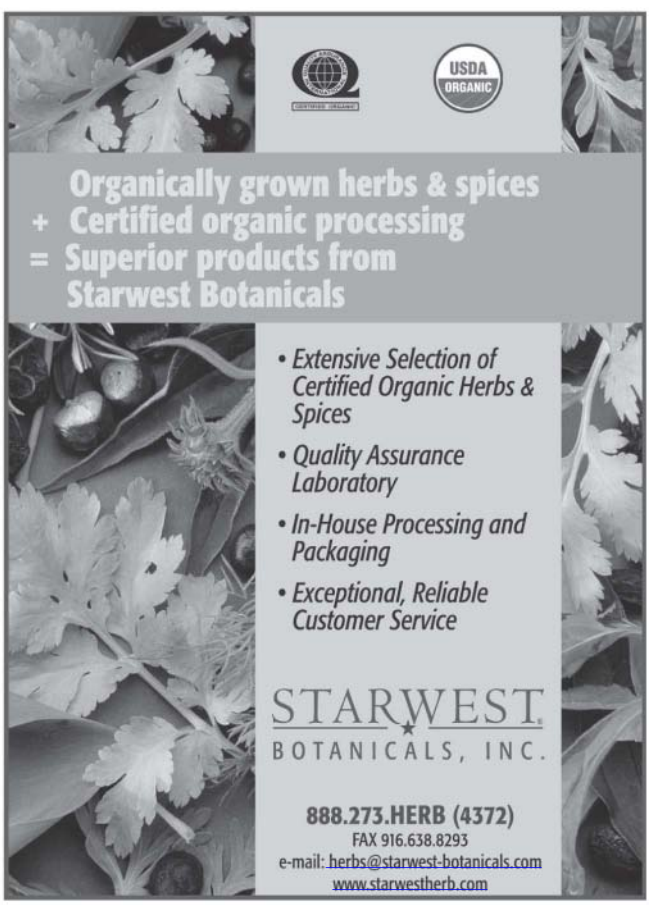
The labels of the SunSpire line of carob and chocolate chips say consumers support rain forest ecosystems and sustainable chemical-free farming by choosing chips made from Central American organic cocoa beans. The ingredient legend is rather simple: organic chocolate [organic sugar, organic unsweetened chocolate, organic cocoa butter, organic vanilla beans, soy lecithin (added as an emulsifier)].

togoorganic.com). It is a great resource to help farmers and processors wanting to convert to organic. It has a collection of resources in a user-friendly format to help with the transition to organic.

The Organic Materials Review Institute (OMRI) is a non-profit organization that reviews brand name products for compliance with organic production and processing. They provide a searchable list of materials allowed in organic crop production, livestock production and processing (http://omri.org/OMRI_datatable.htm). Suppliers of ingredients may contact them to obtain a product listing. Products listed by OMRI may carry an "OMRI-listed" seal, giving assurance that the product is compliant with organic production.

There are also public resources about organics that deserve to be reviewed. The National Organic Program is an excellent compilation of resources and news about the organic regulations (www.ams.usda.gov/nop).

The Organic Foods Production Act of 1990 authorized the Secretary of Agriculture to appoint a 15-member National Organic Standards Board (NOSB). The board's main mission is to assist the secretary in developing standards for substances to be used in organic production. The NOSB also advises the secretary on other aspects of implementing the national organic program. The NOSB reviews petitions for substances to be added to the National List or for non-organic agricultural materials to be added to 7CFR205.606. In addition, they publish all pending issues before the board and solicit public comment (www.ams.usda.gov/nosb). It is important to remember that NOSB recommendations are not official regulatory policy until adopted by the USDA.





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Government Organic Policies Differ Dramatically

E.U. and U.S. organic markets face strong demand under different policies.

Carolyn Dimitri and Lydia Oberholtzer, Contributing Editors

PHOTO COURTESY OF ARS/USDA, SCOTT BAUER



Organic farmer Phil Foster (left) and horticulturist Eric Brennan inspect leaves of red chard on Foster's diverse organic farm in San Juan Bautista, California.

The following article is an Internet version of an article that first appeared in the February 2006 issue of Amber Waves*, which is published by the U.S. Department of Agriculture, Economic Research Service.—Eds.*

Organic markets in the European Union member states and the U.S. are nearly the same size in terms of retail sales. At the same time, their farm sectors differ significantly, with the E.U.-15 member states having more organic farmland and more organic operations than the U.S. (see sidebar "E.U. and U.S. Organic Sectors"). The U.S. and E.U. governments have also adopted markedly different policy approaches to the organic sector. The E.U. actively promotes the growth of the organic sector with a wide variety of policies designed to increase the amount of land farmed organically, including government standards and certification, conversion and support payments for organic farmers, targets for land under organic management, and policies supporting research, education, and marketing. The U.S. largely takes a free-market approach: its policies aim to facilitate market development through national standards and certification and federally funded grants that support research, education and marketing for organic agriculture.

The policy approaches adopted by the two regions are the result of the inherently dissimilar perspectives and histories that the E.U. and U.S. governments have concerning agriculture, the environment, and by extension, organic agriculture. From the perspective of many E.U. countries, organic agriculture delivers environmental and social benefits to society, and is regarded as an infant industry requiring support until it is able to compete in established markets. This view of organic farming as a provider of public goods affords an economic rationale for government intervention in the market.

The U.S. government's approach, while acknowledging organic agriculture's positive impact on environmental quality, treats the organic sector primarily as an expanding market opportunity for producers and regards organic food





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as a differentiated product available to consumers. In such cases, government-devised standards and labels facilitate market transactions and allay consumer concerns about product identity.

E.U. and U.S. Adopt Organic Agriculture Standards and Certification

Both the E.U. and U.S. have established organic food standards, as well as systems that certify operations as organic. Such standards reduce transaction costs by ensuring that attributes of organic food do not have to be specified for each transaction. They also resolve an information problem since a product's "organic" status is unobservable to buyers, whereas the producer has knowledge of the production and handling methods.

Unilever Foodsolutions notes that its Lipton® Organic Teas "are 100% organic, the highest level of organic certification, and are produced on tea plantations dedicated to environmental conservation and protection."

Certification is a process providing third-party assurance that a product was raised, processed and distributed appropriately, and meets the official organic standards. Thus, standards and certification work in tandem. Certification also reduces opportunistic behavior (such as falsely claiming a product is organic) by creating a specific enforcement system. In the U.S., penalties are clearly outlined for firms that use the organic label inappropriately, while the E.U. leaves enforcement up to individual member states.

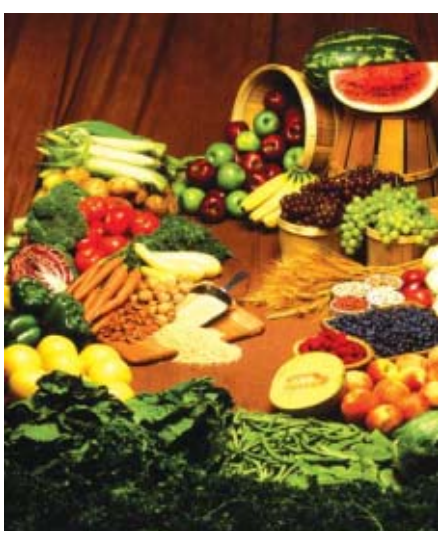
In the E.U., labeling of organic plant products is governed by E.U. Regulation 2092/91 (enacted in 1993); organically managed livestock is governed by E.U. Regulation 1804/99 (enacted in 2000). The regulations set minimum rules for production, labeling and marketing for the whole of Europe, but each member state is responsible for interpreting and implementing the rules, as well as enforcement, monitoring, and inspection. E.U. labeling of organic products is complex because some member states have public labels, while private certifiers in other member states have their own labels, some well known to the public (e.g., KRAV in Sweden, Skal in the Netherlands, or the Soil Association in the U.K.). In addition, the E.U. introduced a voluntary logo in 2000 for organic products that could be used throughout the E.U. by those meeting the regulation. So far, few companies are using the logo. Most recently, in December 2005, the European Commission made compulsory the use of either the E.U. logo or the words "E.U.-organic" on products with at least 95% organic ingredients.

E.U. and U.S. Organic Sectors

The E.U.-15 countries (the countries that made up the E.U. prior to entry of 10 new countries in May 2004) are the focus of this article because much of the data on organic agriculture is on these countries. All references to the E.U. in this article refer to the E.U.-15: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. The E.U. and the U.S. together accounted for 95% of the $25 billion in world retail sales of organic food products in 2003. In 2003, retail organic sales in the E.U., at almost $13 billion (€10 billion), exceeded the $10.4 billion (€8 billion) of U.S. sales. However, per capita retail sales were nearly equal, approximately $34 in the E.U. and $36 in the U.S. The European organic markets are more mature than the U.S. market. The E.U.'s organic sector—particularly Western Europe—had the fastest worldwide growth in the 1990s. Growth in organic retail sales, however, has slowed in some countries, with recent growth rates across the E.U. averaging 7.8% per year. Forecasts of annual growth for organic sales in the next few years range from 1.5% for Denmark to 11% for the United Kingdom. U.S. organic retail sales increased equally rapidly in the 1990s, averaging 20% per year, continued that pace well into 2005, and are predicted to grow 9-16% per year through 2010.Certified organic land in the E.U. rose from 2.1 million hectares (5.2 million acres; 0.405 hectares = 1 acre) in 1997 to 5.1 million hectares in 2003, about 4% of total agricultural area. U.S. organic lands increased from 549,406 hectares in 1997 to 889,734 hectares in 2003—or 0.24% of all agricultural lands. Thus, in 2003, the E.U. had over five times the amount of organic farmland as the U.S., while the U.S. had three times as much total agricultural land.

In the U.S., the 1990 Organic Foods Production Act (OFPA) required that USDA establish national standards for U.S. organic products. The three goals of OFPA were to (1) establish standards for marketing organically produced products, (2) assure consumers that organic products meet a consistent standard, and (3) facilitate interstate commerce. The legislation targeted environmental quality by requiring that an organic production plan pay attention to soil fertility and regulate manure application to prevent water contamination. It also included environmental and human health criteria to evaluate materials used in organic production. Along with the USDA organic logo, the USDA National Organic Standards (NOS) were implemented on October 21, 2002, replacing the prior patchwork system of state organic standards.

Both the E.U. and U.S. rely on accredited agents to certify organic farmers and handlers. The E.U. system is more complicated, largely because member states have some latitude as to how they approve and supervise certifying entities, resulting in a great deal of diversity among the states. A national authority from each member state certifies that organic products comply with E.U. law. These bodies, in turn, approve other entities that are allowed to certify organic production and handling processes. Most member states have government-approved private certification bodies, but some have public member state certification. In addition, some member states and certifiers have additional public or private standards, as well as standards for products not covered under the E.U. regulation, such as fish and nonfood agricultural products. Some certifiers require stricter standards than those



In 2002, according to national surveys, two-thirds of U.S. consumers cited health and nutrition as a reason for buying organic, followed by taste, food safety, and the environment.

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The E.U. and the U.S. together accounted for 95% of the $25 billion in world retail sales of organic food products in 2003.

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of the E.U. legislation. As a result, not all E.U. certificates are acceptable to each certification body. In contrast, in the U.S., agents are accredited by USDA to carry out organic certification, and the certification process is well defined so that all farmers and handlers are certified according to the same standard.

The E.U., Unlike the U.S., Subsidizes Organic Production

European governments (including countries not in the E.U., such as Switzerland) support organic agriculture through green payments (payments to farmers for providing environmental services) for converting to and continuing organic farming. The economic rationale for these subsidies is that organic production provides benefits that accrue to society and that farmers lack incentives to consider social benefits when making production decisions. In such cases, payments can more closely align each farmer's private costs and benefits with societal costs and benefits. E.U. green payments partly compensate new or transitioning organic farmers for any increase in costs or decline in yields in moving from conventional to organic production, which takes three years to complete.

E.U. support for organic agriculture falls under the E.U.'s general agri-environment program that is part of the Common Agricultural Policy (CAP). The E.U. commission establishes the general framework and co-financing, and each member state chooses a set of policies from this menu of measures. The 1992 CAP reform (EC Regulation 2078/92) provided the policy framework for E.U. member states to support organic farming, and many of the payments currently granted were implemented under this reform, dating back to 1994. More recently, under Agenda 2000, these measures were included in the rural development program (Rural Development Regulation No. 1257-99), a CAP reform carried out from 1999 to 2001. In 2001, the E.U.-15 spent almost €500 million ($559 million; the average annual exchange rate



With demand increasing rapidly, suppliers have had a greater struggle to provide organic milk as opposed to organic produce.

PHOTO COURTESY OF ARS/USDA, SCOTT BAUER

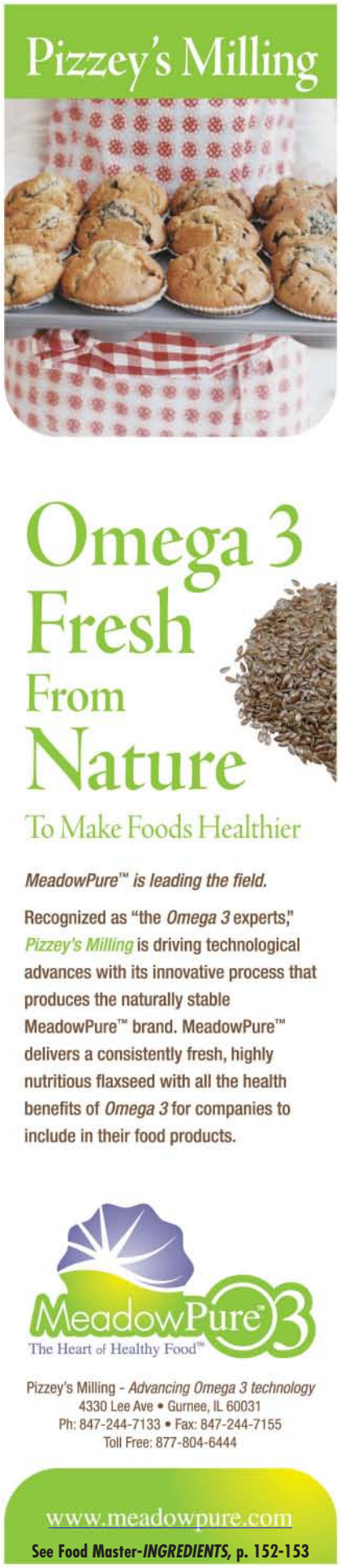
for 2001 was $1 = €0.895) on organic lands under the two measures, with organic farms receiving average payments of €183-€186 ($204-$208) per hectare, compared with €89 ($99) per hectare paid to conventional farms.

Many E.U. Member States Set Targets for Organic Land . . .

Many E.U. member states have established targets for the share of farmland under organic production in their organic farming action plans. The E.U. governments use targets to convey their level of commitment to growth in the organic sector. Some countries have selected relatively attainable targets, while others have chosen more ambitious ones. For example, in 1995, Denmark announced a target of 7% of farmland certified as organic by 2000 and nearly reached this goal with 6%. Denmark's goal of having 12% of farmland certified as organic by 2003, however, fell short. In response to the 2000 Bovine Spongiform Encephalopathy (BSE) crisis, Germany set a target of certifying 20% of farmland as organic by 2010, a number that may be hard to reach since only 4% of land was in organic production in 2003.

. . . and Higher Funding for Research

Public funding of organic-related research and programs is increasing in both the E.U. and U.S., although European governments are financing more programs with a broader range. European funding supports innovation in production techniques, food processing, food marketing, and food retailing, and is estimated at €70-€80 million annually from 2003 to 2005. Germany, the Netherlands, Switzerland, and Denmark accounted for 60% of this. In fiscal year 2005, the U.S. government made approximately $7 million available exclusively for organic programs, including a certification cost-share program and $4.7 million for a research grant program. This amount





On a Salinas Valley, California, organic farm, horticulturist Eric Brennan harvests a bundle of a late-summer rye cover crop from a 1-meter-square quadrant to analyze biomass production.

PHOTO COURTESY OF ARS/USDA, SCOTT BAUER

is supplemented by other programs that benefit organic producers, including funding for organic research and technical assistance by federal, state and local agencies that focus on organic agriculture.

Consumers in Both Regions Drive Market Growth

In many ways, development of the E.U. and U.S. organic markets has followed a similar path. In the early days, the organic sectors were supply driven, and organic products were introduced by farmers. More recently, consumers have been the driving market force in both regions. Studies indicate that most European consumers have shifted from buying organic food for altruistic reasons to more self-interested reasons, such as food safety and health. Ranking behind these are taste, nature conservation and animal welfare. Similarly, U.S. consumers 20 or more years ago bought organic food because of their concern for the environment. In 2002, according to national surveys, two-thirds of U.S.

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The 2003-04 CAP reforms in Europe partially shift agricultural policy toward a marketdriven policy. The system will change to a single-farm payment independent of the volume of production. While the impact on organic agriculture is still unknown, the overall changes are expected to favor an expansion of organic farming.

PHOTO COURTESY OF ARS/USDA, KEITH WELLER.

consumers cited health and nutrition as a reason for buying organic, followed by taste, food safety, and the environment.

Consumers in both regions offer similar reasons for why they do not purchase organic food. In Europe, the main factors include high prices, poor product distribution, little obvious difference in quality, lack of information on the nature of organic products, and doubts about the organic integrity of the items. In the U.S., according to consumer surveys, price leads the list of barriers to purchasing organic products, followed by availability of organic products. Despite these factors, retail sales are growing rapidly in both regions.

In 2003, U.S. organic food sales were distributed almost evenly between natural product/health food stores (47%) and conventional retail stores (44%), with direct sales and exports accounting for 9%. This is a significant shift from 1998, when corresponding sales were 63%, 31% and 6%. As in the U.S., mainstream European supermarkets in some countries stock a wide range of organic products. However, the main type of retail channel for organic food varies across countries. Over 85% of organic products are sold through general food shops in Denmark; in Luxembourg and Greece, organic foods are primarily sold through other stores (e.g., organic/health food stores, bakers and butchers). In a number of countries, including Ireland, Italy, France, Belgium, the Netherlands and Germany, sales are more evenly divided between supermarkets and other stores.

Although the organic market is growing in both the E.U. and the U.S., there are some problems with the flow of products to market. In Europe, the organic dairy and livestock industries, in particular, have grown rapidly over the last decade, and in some cases have outpaced the capacity of the market and distribution channels. Organic milk supplies in some regions were large enough to reduce organic prices, causing some producers to exit the sector because they were unable to turn a profit. The milk glut, however, appeared to be giving way to shortages in the U.K., as

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EU and U.S. organic sectors, 2003

Country	Retail sales	Organic operations	Organic land	Farmland under organic production
	Million euros	Number	Hectares	Percent
Austria	400	19,056	328,803	9.7
Belgium	300	688	24,000	1.7
Denmark	339	3,510	165,146	6.1
Finland	212	5,074	159,987	7.2
France	1,578	11,377	550,000	1.9
Germany	3,100	16,476	734,027	4.3
Greece	21	6,028	244,455	6.2
Ireland	40-50	889	28,514	0.7
Italy	1,400	44,039	1,052,002	6.9
Luxembourg	NA	59	3,002	2.4
Netherlands	395	1,522	41,865	2.2
Portugal	NA	1,507	120,729	3.2
Spain	144	17,028	725,254	2.8
Sweden	420	3,562	225,776	7.4
United Kingdom	1,607	4,017	695,619	4.4
European Union[1]	9,966	134,434	5,099,179	3.9
U.S.[2]	8,047	8,035	889,734	0.2

NA = Not available.
Note: U.S. retail sales dollars were converted to euros using an exchange rate of $1.29 = 1.00, May 2005.
[1] Some EU land numbers are provisional. All EU hectares and farms are for certified organic and in-conversion land. Numbers for Sweden do not reflect the substantial hectares that are managed organically but not certified. In Sweden, these lands are given governmental support payments as recognition by Sweden and increasingly other Scandinavian countries that financially supporting organic land management for environmental gain does not necessarily need to be linked to the marketing of organic food, for which certification is a legal requirement. In Sweden, these lands accounted for another 180,000 hectares and an estimated 12,500 farms in 2003.
[2] The U.S. reports certified organic acreage, which has been converted to hectares (1 acre = 0.405 hectares). The U.S. does not report farms or acreage in transition to organic production, as does the EU, and does not report subcontracted organic growers.
Sources: Various sources, cited in Market-Led Versus Government-Facilitated Growth: Development of the U.S. and EU Organic Agricultural Sectors, by Carolyn Dimitri and Lydia Oberholtzer,WRS-05-05,USDA, Economic Research Service, August 2005, available at: www.ers.usda.gov/publications/wrs0505/. U.S. operation and land numbers for 2003 are available at: www.ers.usda.gov/data/organic/

demand continues to grow and supply has declined. The U.S. organic food market was formerly supply constrained, but now seems better able to meet consumer demand, especially for fresh produce. In the dairy market, however, with demand increasing rapidly, suppliers are struggling to provide enough organic milk to satisfy demand at current prices.

E.U. CAP Reform Renews Support for Organic Farming

In June 2004, the European Commission adopted an Action Plan for Organic Food and Farming, with 21 policy actions aimed at facilitating ongoing developments in the organic sector. The actions are focused on three main areas: information devel-

opment, e.g., increasing consumer awareness, improving statistics on organic production and demand); encouraging member states to apply a more coherent approach and to make better use of the different rural development measures; and improving/reinforcing the E.U.'s organic farming standards and import/inspection requirements.

The 2003-04 CAP reforms partially shift agricultural policy toward a market-driven policy and convert the current system of direct payments to a single-farm payment independent of the volume of production. The single-farm payments began in 2005, with member states having discretion in implementing them. The farm payment will require cross-compliance with a wide range of standards, including environmental, food safety, animal welfare and occupational health/safety. While the impact on organic agriculture is still unknown, the overall changes are expected to favor an expansion of organic farming. Pf

Carolyn Dimitri and Lydia Oberholtzer are with the Economic Research Service, USDA. For Amber Wave*'s Internet version, see www.ers.usda.gov/AmberWaves/February06/Features/feature1.htm, which has additional statistics and information. The article is drawn from "Market-Led Versus Government-Facilitated Growth: Development of the U.S. and E.U. Organic Agricultural Sectors" (www.ers.usda.gov/publications/wrs0505/) by Carolyn Dimitri and Lydia Oberholtzer, WRS-05-05, USDA, Economic Research Service, August 2005 and "The ERS Briefing Room on Organic Farming and Marketing" (www.ers.usda.gov/briefing/ organic/).* Amber Waves *contains articles by ERS researchers and their collaborators.* Amber Waves *does not accept articles from outside researchers. Use of commercial and trade names does not imply approval or constitute endorsement by USDA. Photos and images for this article were obtained by the* Prepared Foods*' editorial staff.*



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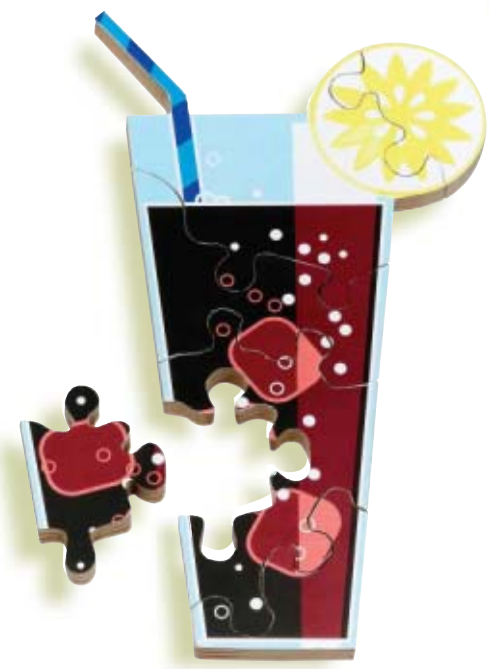
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www.aboutaspartame.com

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Texture Enhancement Tactics



Texture management helps maximize shelflife and improves quality characteristics in reduced-fat and -calorie foods. It is also crucial for developing properties such as freeze/thaw stability, particle suspension, creaminess and enhanced melt properties.

Elizabeth Mannie, Contributing Editor

Texture maintenance is a priority in food production due to the constant need to increase shelflife, manage moisture, reduce fat or calories, add healthier fats, optimize processing, and develop specific textural properties such as freeze/thaw stability, particle suspension, creaminess and enhanced melt properties. Product developers have a number of ingredients at their disposal that can help manage texture.

Chemistry and Function of Gums

C. Ronnie Yuan, principal scientist at a leading hydrocolloid gum supplier explains, "Gums function either as gelling agents or thickeners (viscosifiers). In both cases, gum polymers can interact with each other through hydrogen bonds, electrostatic attraction, or hydrophobic interaction to thicken texture by controlling water."

Gum choice is determined by the properties desired in a particular product. "For example," Yuan explains, "xanthan gum is a much better stabilizer than guar gum in salad dressings because of its desirable rheology and acid stability. And in regular chocolate milk, carrageenan is a preferred choice due to its unique interaction with milk protein (casein). But in soy-based chocolate beverages, a gellan gum 'fluid gel' is a better choice in providing the structure needed to suspend cocoa particles."

Cakes typically use a combination of instant modified starch, gums and emulsifiers. This combination of texturants optimizes batter viscosity, impacting the finished baked good's texture, internal crumb structure, eating quality and shelflife.

"The primary function of gums in cheese products is water stabilization. This provides the desired viscosity and influences the final body and texture in finished cheese products and sauces. Gums also aid in firming cheese products to the point of being easily shredded or sliced. They are available in different particle sizes to aid in dispersion in different processing systems. As hydrophilic colloids, gums disperse very well, are soluble in water and bind well with casein. Gums can also be used as a full or partial replacement for fat in reduced- or no-fat products," offers John Vojtech, senior scientist at Land O'Lakes Inc., a large supplier of consumer dairy products.

Gum Facts to Chew On

Guar gum and carrageenan are not very stable in low-pH environments, and under similar conditions, xanthan gum can cause flocculation of protein. Protective hydrocolloids such as pectin and carboxymethyl cellulose (CMC) can be

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In cheese products and sauces, starches provide body and textural attributes through gelation.

used to prevent protein flocculation in acidified protein drinks. However, they only work in a pH range typically between 3.8 and 4.2. Some gums require high shear for activation, whereas others require heat to hydrate.

"For cheese products, the standards of identity determine whether gum is allowed in the finished product. For example, gums are allowed in cheese spreads, but not in cheese food or process cheese. This scenario can be overcome by calling the final cheese 'pasteurized process cheese product' which has no standard of identity," adds Vojtech.

"Certain gums have synergistic interactions that result in very different textures than the individual gums alone," adds Yuan. "For example, xanthan and locust bean gums, which are not typically considered as gelling agents, can form a rubbery gel when used together." Other synergistic combinations include xanthan and guar gum (used to enhance viscosity in sauces or beverages), xanthan and konjac glucomannan (rubbery gels), carrageenan and locust bean gum or konjac glucomannan (used for gelling in water dessert gels).

Combining two different textural components, such as elastic and brittle gels, to create new textures can also be an interesting approach used by food formulators. A water dessert gel with a very desirable gel texture can be formulated using xanthan gum, locust bean gum (which form a rubbery gel together) and low acyl gellan gum (which has a brittle texture).

Showcase: Gums, Starches and Emulsifiers



A new stabilizer provides the structure that gluten-free products lack and is both affordable and easy to use. Gum Technology's Coyote Brand Stabilizer ST-101's blend of xanthan and guar gums works synergistically, allowing them to be used at a much lower concentration (about half) than that of straight xanthan alone. For a sample and gluten-free brownie recipe, call 800-369-GUMS. Gum Technology Corporation, 800-369-4867, info@gumtech.com, www.gumtech.com

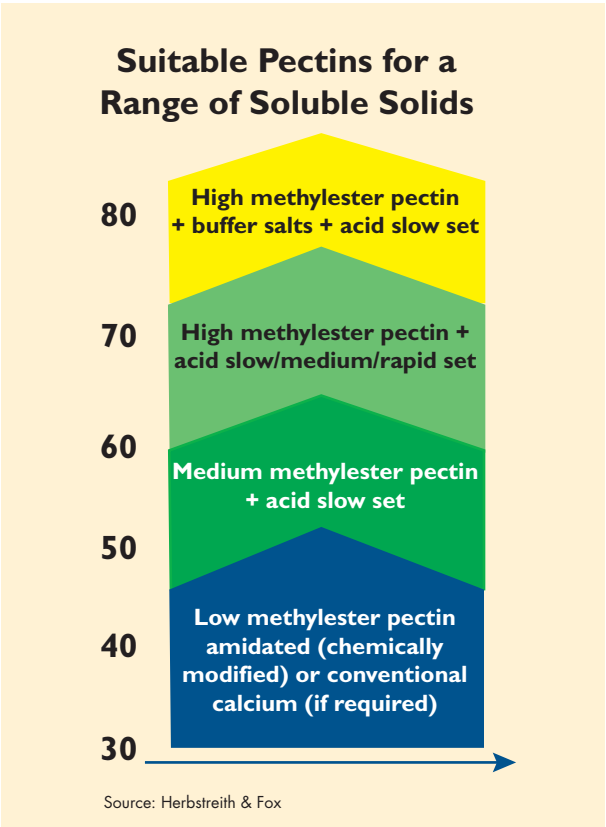
Rebuild texture and improve consumer acceptance of low-fat and fat-free milk products with a new beverage texturizer. TEXTRA® provides the dairy industry with the tools to **create a whole milk sensory experience without the fat** by adding 1.5% and effectively delivering a rich, creamy mouthfeel. TEXTRA performs well in many beverages, including products typically considered too low in viscosity to suspend with other texturizers. National Starch Food Innovation, Marshall Fong, 908-685-5000, Marshall.Fong@nstarch.com, www.nationalstarch.com

A natural extract of the white bean may assist in weight and blood sugar control by slowing enzymatic starch digestion. StarchLite™, also known as Phase2®, is a dietary ingredient that is self-affirmed GRAS and can be incorporated into food or beverages without a standard of identity. Consumer acceptance tests of baked goods showed statistical parity for all measures at both 90% and 95% confidence levels, and the StarchLite sample scored numerically higher for overall taste. Pharmachem Labs, Gregory Drew, 800-526-0609, gdrew@pharmachemlabs.com



A very effective and versatile rheology modifier is now available. ADM's NovaXan™ xanthan gum **provides stability and improved textural qualities, pouring characteristics and cling.** It is ideal for salad dressings, sauces and marinades as well as baked goods and dairy products. NovaXan offers unique flow behaviors, instantaneous, reversible shear-thinning and high viscosity, even at low concentration. For customers looking to create products with high quality textural characteristics, stability and aesthetic appearance, look no further. ADM, 800-637-5843, info@admworld.com, www.admworld.com

A custom-designed dry ingredient systems company can solve many of the baking industry's texture and stability challenges. Advanced Food System's TexRite® bakery systems can be used in the dough or as a glaze to significantly improve texture in fresh par-baked and frozen baked goods. The benefits include **consistent baking and reduction in freezer burn, cracking and chewy post-freeze problems.** TexRite offers "home-baked" quality to large-scale operations without sacrificing quality or shelflife. Advanced Food Systems Inc., Anton Dodel, 732-873-6776, lab@afsnj.com



Shown are pectins with different degrees of esterification that are useful in a range of soluble solids in various product formulas.

Pectin Uses

Pectin is used as gelling agent in a variety of food products such as fruit spreads, desserts, and confectionery products. Pectin also acts as a thickener in fruit preparations, dairy products like ice cream, bakery fillings, glazes, dressings and condiments. In sorbet, pectin controls ice crystal growth and melting behavior. When used in beverages, pectin provides good mouthfeel and body and enhances pulp stability.

"Apple pectin gives a smooth gel structure with a lot of mouthfeel and enhanced flavor transfer, while brittle textures are obtained with citrus pectin," offers Frank Mattes, sales manager for a top pectin manufacturer. It is possible to create different textures with different types of pectin, including a stretchy and tailing structure similar to starch. However, it is also possible to produce confectionery products with short and chewable textures.

"The gelling properties of pectin depend on soluble solids present in the product," states Mattes. In confectionery products, 99% of the soluble solids are sugar. "Pectin can also be used as a thickener or gelling agent in products with almost no soluble solids, but different pectin types may need consideration depending on the soluble solids content." Like

Showcase: continued



A leading developer and manufacturer of specialty starches and dextrin for all segments of the food industry has introduced products that enhance the taste, texture and performance of foods. Penford Food Ingredients Co. has expertise in leveraging the inherent characteristics from potato, tapioca, rice and corn to help improve product quality. Their PenBind®, PenPlus®, PenCling® and PenTech® products help **provide crispy texture in coated applications, moisture in meats, structure in gluten-free breads, shredability in imitation cheeses** and smoothness in sauces, gravies and bakery fillings. Penford Food Ingredients Co., Andrea Gaebe, 303-643-1687, agaebe@penx.com

Some new data provides a **better understanding of the relation between mouthfeel in beverages and various hydrocolloids.** In breakthrough research, CP Kelco has developed texturizing agents such as GENU® pectin, CEKOL® cellulose gum, KELTROL® xanthan gum and KELCOGEL® gellan gum. Each contributes in different ways to the sensory perception of drinks due to differences in viscosity and density. To learn more about what hydrocolloids can do for your product or to learn more about the research, contact the company. CP Kelco, Jane Schulenburg, jan.schulenburg@cpkelco.com, www.cpkelco.com

As an excellent film former, **native and oxidized pea starch acts as a barrier for water or fat uptake, thus providing many application possibilities.** Pea Starch N735, from Roquette America Inc., with a higher amylase content (35%) and derived from yellow pea, provides unique characteristics to finished products. It gives crispiness to cereals and French fries, maintains integrity of transparent noodles during cooking and preserves crispness of microwaveable battered food items. Custards, confectionary and meat substitutes are among the other applications of this unique starch. Roquette America Inc., Chandani Perera, 800-553-7035, www.roquette.com



When grain and fiber are added to baked goods, the gluten and dough matrix become stressed. Overcome these processing challenges in whole-grain products with Danisco's PANODAN® DATEM, which **strengthens the gluten matrix, so that the dough can handle the addition of grains and fibers without sacrificing quality.** Whole-grain products can include many types of grain lipids. PANODAN emulsifies the flour and added fat in whole-grain dough, resulting in a finished product with better crumb structure and eating qualities. Danisco USA Inc., 800-255-6837, ext. 1173, www.danisco.com

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Cross-linked, substituted starches in combination with various hydrocolloids have excellent bake stability in bakery jams or acidic fillings.

soluble solids content, pH is also a consideration for choosing the appropriate pectin type. Pectin works best in products with a pH lower than 4.5. Above pH 5.0, pectin very quickly degrades.

"Pectin is a polyelectrolyte," Mattes explains. "Ionic strength and ion type influence the gelling behavior of pectin. Because of their molecular structure, low methyl ester pectin and citrus pectin have increased affinity to cations, especially calcium ions. For confectionery products, increased affinity to ions can be problematic, as it leads to faster gelling behavior." In this case, apple pectin can be utilized for its enhanced tolerance to cations. Pectin also sometimes interacts with proteins, such as casein and soy proteins, so pectin can be used to stabilize protein-containing beverages like smoothies.

Singling Out Starches

In cheese products and sauces, starches provide body and textural attributes to the final product through gelation. "Starches are typically more economical than gums, can be used as bulking agents and usually have little or no flavor influence on the final cheese sauce or product," offers Vojtech. Starches also can be effective replacements for cheese solids, providing sensory and performance characteristics in a more cost-effective manner than oils and dairy powders. "It is critical to consider all aspects of the requirements for the final product, plus processing and storage when choosing a starch," he states. Key starch attributes to consider are fast hydration and gelation during processing, final viscosity, storage and freeze/thaw stability, texture/mouthfeel and cost.

"In baked goods, lipophilic starches are a great addition to the line-up," says Wendy Erickson, technical manager of the Bakery, Snacks & Cereal Category at a leading supplier of bakery ingredients. "They provide improved shelflife because of their ability to complex with fat and increase freezer stability."

Resistant starches can help dilute the calorie contribution from carbohydrates in baked goods. There are four classifications of resistant starches. One and two are naturally found in plants, but typically not in high quantities. Class three are retrograded starches, and class four are chemically modified starches. "While all resistant starch products have overall lower caloric content, a class four resistant starch which is high in dietary fiber has the greatest impact in a finished baked good, contributing negligible calories," adds Erickson.

Starch properties vary, depending on their source. Tapioca starch has approximately 17% amylose, which allows for some retrogradation and soft gel formation at high enough

Showcase: continued



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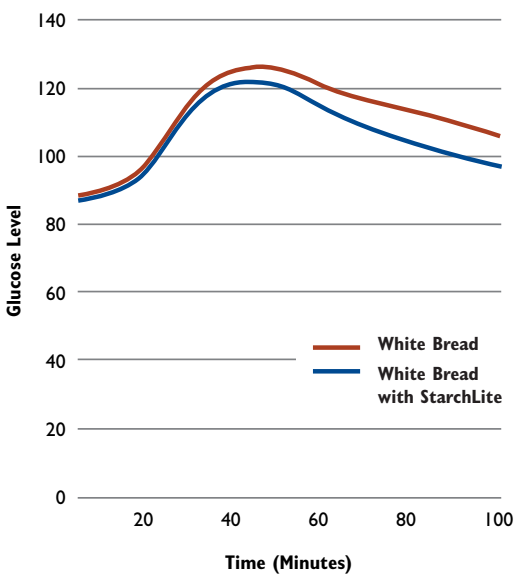
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concentrations. At 20%, potato starch has slightly more amylose, which in combination with its large granule size, produces a salve-like consistency. "Potato starch inherently offers higher viscosity than other starches in a native state or at equal modification levels," offers Judy Turner, advanced technical resource at a supplier of potato and tapioca starch.

Tapioca starch has a clean flavor and tends to be used in mild flavored products such as those with a dairy base. "In vanilla flavored dairy products such as yogurt, pudding, cream and cheese sauces, tapioca starch does not hide the delicate dairy flavor notes," Turner adds.

Both tapioca and potato starches improve mouthfeel and body of reduced fat and sugar foods. Potato starches, because of their large granule size, do not give as smooth and shiny a texture as other starch types. "For this reason, potato starches are found in barbecue sauces or other tomato-based sauces where the texture does not detract from the final appearance," Turner explains.

Emulsifiers and Texture

Emulsifiers are another group of ingredients often crucial to the texture of products. In baking, emulsifiers can help "mix oil and water" by exhibiting both lipophilic and hydrophilic properties. The hydrophilic/lipophilic characteristics of emulsifiers are described by their HLB (Hydrophilic/Lipophilic Balance). A low HLB indicates an emulsifier with strong lipophilic character, while a high HLB emulsifier has more hydrophilic tendencies.

"Emulsifiers such as mono and diglycerides or lecithin not only tenderize the finished cake but also contribute to cake batter viscosity. Emulsifiers reduce surface tension and allow greater incorporation of air into the batter. In breads, emulsifiers complex with protein and starch portions and strengthen the extensible gluten-starch film and delay the setting of the dough during baking," contributes Erickson.

"In the cheese industry, the most commonly used emulsifiers are orthophosphates and citrates. Phosphates are used in loaf and block products, since they do not react well in quick cool processes. Citrates act well in processes that call for quick cooling, such as cast slices. In this process, the cheese is cooled before packaging and storage and needs a quick-acting emulsifier," states Vojtech.

Both phosphates and citrates emulsify by exchanging sodium ions for calcium ions in the casein portion of the cheese. "Simply stated, this allows the casein strands to unwrap and become more receptive to linking with the fat globules in natural cheeses, increasing the ability for the protein/water matrix to hold fat," explains Vojtech. Mono and diphosphates are lower in pH than trisodium phos-



See Food Master-*INGREDIENTS*, p. 98

phate (TSP), and therefore impart more firmness to the final product. TSP has the highest pH, and the resulting product is not as viscous during processing or as firm when cooled as are products using other phosphates.

Sodium hexametaphosphate (Hex) is a condensed orthophosphate that has greater emulsification ability than orthophosphates or citrates. Hex helps hold the fat in the cheese structure better and creates a firm body and high degree of melt restriction in the final product. "This is very desirable for products that need to withstand high temperatures during further processing or use by consumers," Vojtech adds.

Synergistic Texturants

In baked goods, texturants are used alone and in synergistic combination to achieve the desired processing and finished baked product quality. "All baked products benefit from the addition of a texturant of some type. For example, cakes typically use an instant modified starch, gums and emulsifiers. This combination optimizes batter viscosity impacting the finished baked texture, internal crumb structure, eating quality and shelflife," contributes Erickson. Optimized batter rheology helps retain the gases released from the chemical leavening system. If the batter viscosity is too thin, the gases are released, resulting in dense, lower volume cakes.

"Cross-linked, substituted starches in combination with various hydrocolloids have excellent bake stability in bakery jams or acidic fillings," contributes Andrea Peck, food scientist at a baking ingredient supply company. While pectins and alginates may contribute a firmer gel texture to fillings, combinations with modified starches can add a softer, shorter texture. In addition, modified starches aid in reducing boil-out and moisture management during the extra thermal process step. Together, the blends may have low viscosity during processing for ease of pumping and depositing, but form a set when applied to the product," she says.

When in doubt, suppliers have lots of good information to help with specific texture issues. It is even possible to customize blends of texture ingredients and achieve the perfect mix to meet specific needs. Pf

Website Resources:

www.cargilltexturizing.com/products/functional/emulsifier/cts_prod_fun_emul_fun.shtml — Explains emulsifier functionality with useful diagrams

www.cpkelco.com/products/index.html — Information on hydrocolloid gums

www.PreparedFoods.com — Searchable website using terms such as "hydrocolloid gums" and "texturizing ingredients"

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Meeting the Needs of Meats



Products of increased yields with tender, sliceable texture and of maximum safety: These are the challenges of formulators of meat products. Here are just a few of the sessions at *Prepared Foods*' 2006 R&D Seminar that covered this subject.

Lactates in Meat and Poultry Products

Lactates are sodium and potassium salts of lactic acid. These GRAS compounds have a neutral pH, a slightly salty taste and are naturally present in many meat products. They are hygroscopic and have bacteriostatic properties, as well. When used in meat and poultry products, lactates may enhance food safety, improve shelflife, help to stabilize color, increase flavor and improve production yields. Perhaps the most important function in an era in which food safety is front and center is their ability to help inhibit microbial growth. Adding lactate to meat formulations adds an additional hurdle to the growth of potential food pathogens such as *Listeria monocytogenes* and food spoilage organisms. This, in turn, helps increase shelflife. Depending upon the concentration, lactates will inhibit the growth of Listeria, when compared to control samples without the ingredient.

The addition of lactate also will enhance product color. Browning is slowed when lactate is added, and it is inhibited even more when lactate is used in combination with acetates.

In meat systems, the bacteriostatic effect of lactates is a function of reduced water activity, the presence of undissociated acid ions and a feedback mechanism. Since the compounds are hygroscopic, they will absorb moisture, reducing the free water available to microorganisms. The mechanism of acidification through undissociated ions is a bit more complex. What happens in this case is that once sodium lactate and lactic acid come into equilibrium, the undissociated acid can cross the cell wall and lower the internal pH of the organism. The cell must work to bring its internal pH back into equilibrium, so growth is inhibited. The feedback mechanism is caused by the presence of lactate or acetate outside the cell. The presence of these compounds at high levels inhibits transportation of by-products formed during its energy metabolism to outside the cell. The result is an inhibition of further energy production and growth.

The use of antimicrobial agents such as lactate is part of the USDA's Food Safety and Inspection Service's 2003 interim rule describing alternatives to control *Listeria monocytogenes* in ready-to-eat foods. Processors have the option of using: 1) A post-lethality treatment and an antimicrobial agent. 2) A post-lethality treatment or an antimicrobial agent. 3) Good sanitation.

According to PURAC, one of its ingredients for Listeria control enables processors to determine the

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Formulating items with 1.5% gum in water with the percentages of the types of carrageenan shown results in varying degrees of syneresis after the system has been frozen, then thawed.

growth rate of Listeria in relation to different growth parameters and set the proper use level of lactate and diacetate to control *Listeria monocytogenes*.

The use of lactate in both fresh and ready-to-eat meat products can help minimize pathogen growth and reduce the potential for spoilage, thereby increasing food safety, shelflife and enhance flavor. Usage levels and delivery systems vary for the potential applications. Recommended levels in ready-to-eat products range from 2.0% to 3.3%, whereas use levels in fresh meat items are generally between 1.5% and 2.5%, depending on the application. The compounds may be mixed into the emulsion during blending (sausage products) or be injected into whole muscles as part of the brine. Working with the vendor to determine optimum usage levels that provide optimum antimicrobial activity and flavor profiles is the right path for a processor wishing to use lactate.

"Lactates in Meat and Poultry Products," Rene Monderen, senior market development specialist, Purac America Inc., r.monderen@purac.com, www.purac.com
—Summary by Richard F. Stier, Contributing Editor

Carrageenan Solutions

Carrageenans are excellent binder systems that may be used in meat and other systems. They are extracted from a family of red seaweeds that have been harvested, cleaned and processed. During processing, the cellulose is removed by centrifugation and filtration, leaving a carrageenan solution. This is then concentrated by evaporation and dried.

In meat products, carrageenans may be used to enhance weight retention or product yields and to improve consistency, sliceability or spreadability of finished products. In addition, they can decrease the amount of purge, slicing loss and reduce loss from drip, while improving the potential for manufacturing high quality, low-fat products with better production economies.

Carrageenans are available in three different types: kappa, iota and lambda. Kappa produces stringy, very rigid gels, whereas iota yields softer gels. Formulating with different percentages of kappa and iota carrageenan will affect product performance. (See chart "Freeze/thaw Stability Provided by Carrageenans.") As the graphic indicates, meat products formulated with iota carrageenan showed the lowest level of syneresis. Those with kappa carrageenan had the greatest.

Freeze/thaw Stability Provided by Carrageenans

Carrageenan Type	% Syneresis
100% Kappa	15%-20%
100% Iota	1%-2%
80% Kappa 20% Iota	15%-18%
70% Kappa 30% Iota	7%-9%

Source: PL Thomas Inc.

Using carrageenan in combination with other gums such as locust bean or xanthan can produce a synergistic effect. In other words, it produces a system that enhances the capabilities of both ingredients. Gel systems using carrageenan and locust bean gum will result in reduced syneresis, enhanced elasticity and cohesiveness, and an ability to withstand higher temperatures. These two gels must be heated to at least 80˚C to ensure that the gels will dissolve.

When formulating with carrageenan, processors must consider the water chemistry at their facilities. If the water at a production facility is too hard, water-soluble carrageenan functionality will decrease significantly. For optimal functioning, water hardness levels should not exceed 60ppm.

"Carrageenan Solutions for Yield, Drip Loss, Improved Sliceability and Syneresis Control," Rodger H. Jonas, national business manager–food, P.L. Thomas, rodger@plthomas.com, www.plthomas.com
—Summary by Richard F. Stier, Contributing Editor

Carrageenan in Meats and Poultry

Carrageenan gels are used in a wide range of industries including meat, dairy and other foodstuffs. Some 48% of all carrageenan used in the U.S. is used in meat processing and 36% in the dairy industry. Carrageenan is manufactured from dry seaweed, so it is a natural product, which is a valuable marketing tool in this day and age. Natural Grade Carrageenan (NGC) is acknowledged as a

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natural ingredient and may be used in delicatessen meats and whole cuts of meat. It reduces overall costs, improves texture, enhances slicing and improves operating efficiencies by reducing the potential for needle clogging.

Carrageenans are used in delicatessen meats such as turkey, ham, chicken roll and beef and in marinated products such as rotisserie chicken, case-ready raw marinated meats and whole smoked turkeys. For example, carrageenan manufacturers suggest that 40% pump be used for roast turkey breast. A brine consisting of 85.1% water, 1.7% trisodium phosphate, 5.7% salt, 5.7% dextrose and 1.8% carrageenan would yield a product with the following characteristics: reduced cook loss and package purge, improved texture and sliceability, a lower cost and fewer stretch marks. Pumping also reduced the cost of the product due to pickup and retention of water and brine. Similar benefits may be achieved by pumping whole chicken and other poultry.

It is recommended that carrageenans used in processing applications be low dusting and easily dispersible in brines. The dry carrageenans should be blended with salts and sugars that quickly dissolve in water. Salts that dissolve slowly such as phosphates should be dissolved gradually in cold water. The carrageenans should then be vigorously stirred in the cold brine to disperse them. When pumping, the brine tank should be subject to continuous agitation to ensure that the carrageenans remain properly dispersed.

As the enzyme level in a bologna formulation increases, the breaking stress of the product increases as well.

"Carrageenan Types and Technology for Processed Meat and Poultry," Scott Rangus, sales and marketing, Ingredient Solutions Inc., info@isinc.to, www.isinc.to
—Summary by Richard F. Stier, Contributing Editor

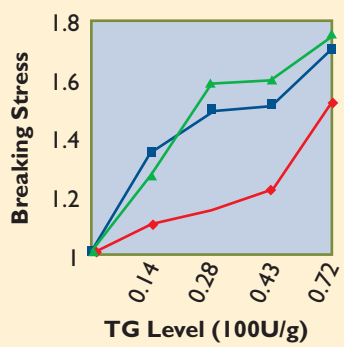
Transglutaminase: Information and Applications

Transglutaminase is an enzyme that forms cross-links between protein molecules, thus binding them together. This cross-linkage has unique effects on items such as protein properties, gelation capability, thermal stability and water-retention capacity.

The cross-links formed by transglutaminase strengthen the protein network structure in prepared meat products such as sausage and ham (both restructured and whole muscle), improving elasticity and firmness. It enhances slicing of delicatessen-style products, maintains or enhances texture, allows product development personnel to reduce salt and phosphates in products, allows the reduction of total meat content in formulated products and enhances texture in retorted meat products. For example, in a sausage, as the enzyme level in a formulation increases, the product's breaking stress increases. This could allow a processor to more easily make claims for reduced sodium and/or reduced fat (see chart "Transglutaminase (TG) Level vs. Texture").

With transglutaminase and proteins as a preparation, a processor can turn food pieces into consistently formed portions. The system can add value to traditional cuts of meat and reform tenderized non-traditional cuts. The enzyme system may be added in the mixer at levels of 0.5% to 1.0% or used in tumblers at the same percentage. It also can be sprinkled on cuts of meat or added in a liquid slurry. Meat quality, condition of the meat

Transglutaminase (TG) Level vs. Texture



Source: Ajinomoto Food Ingredients LLC

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(frozen, thawed or degree of thawing), temperature and reaction time all affect bonding. The system may be used for restructured block items such as kabobs and fajita strips, fish, shrimp and shellfish (e.g., scallops).

The microbial transglutaminase has a relatively wide range of application conditions. It is active over a fairly wide pH range and at pH values that are typical for many food systems. It is also active over a broad temperature range, even during the early stages of cooking. This temperature range makes it more versatile for use in processes where some of the conditions may be extreme.

The enzyme system may be used in all food products as "Generally Recognized as Safe (GRAS)" in the U.S. It should be labeled as "Enzyme" in the ingredients statement. Usage levels in processed meats and poultry is 65ppm, except for chicken breasts at 100ppm. The safety of the enzyme also has been approved by Health Canada. There are currently petitions pending for its use in meats, dairy and other products.

"Transglutaminase: Binding and Texture Modification of Muscle Foods," Ajinomoto Food Ingredients LLC, www.ajiusafood.com
—Summary by Richard F. Stier, Contributing Editor

Using Fruit Fiber in Meats

Incorporating fruit fiber in meat products can yield unexpected nutritional benefits, including dietary fiber content as high as oat- and wheat-derived ingredients. They can either be neutral when it comes to taste or with typical fruit flavor. Finally, excellent technological properties can help a meat processor to improve quality or control costs. Fruit fibers from citrus and apple have the additional advantage of being plant cell wall materials, which are not classified to be allergens.

Fruit fiber is manufactured by drying and sieving insoluble plant cell wall materials available, for example, from juice production. Remaining sugars or flavor components can be further eliminated by additional washing steps; this also enhances the fiber's dietary fiber content. The excellent water-binding properties are credited to the fiber's sponge-like morphological structures as well as the balanced profile of insoluble and soluble dietary fiber.

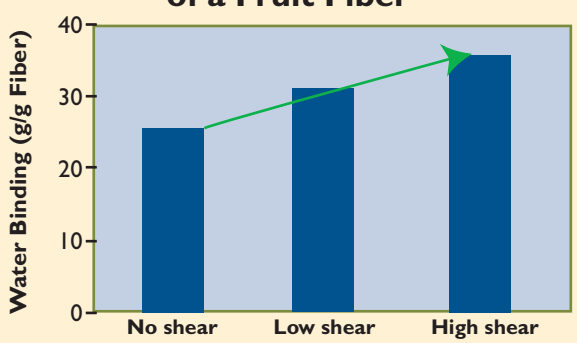
Higher water binding and a smoother consistency can be achieved by increased shear force during processing.

For example, one commercially available citrus fiber has four to five times the water binding capacity as cellulose rich fiber from oat husks or wheat stems. An additional benefit of the fiber is its low caloric content and that it is readily dispersed in cold water. As the concentration of fruit fiber in water increases, the viscosity of the solution increases significantly. At about 5% the citrus fiber rehydrated in water has a paste-like consistency. In contrast to cereal-based ingredients with a rigid and dense surface, fruit fiber is very smooth. Processing by shear forces (as done during chopping) improves the rehydration process of the fiber, leading to increased water uptake and smoothness. This will mimic the mouthfeel of fats, allowing for the creation of reduced-fat meat products. Examples of reduced-fat products that could be produced using the citrus fiber are sausages, beef patties, teawurst and liverwurst. In both regular and reduced-fat meat products, a reduced syneresis enhances the quality and appearance, especially when stored under vacuum.

The good ability to bind water may also allow meat processors to reduce the salt content in their formulations (see chart "Shear Forces on Water Binding of a Fruit Fiber"). The citrus fiber can be even helpful in products with acidic ingredients like tomato pieces, which normally reduce the water binding of meat protein by lowering the pH-value. The citrus fiber products can help balance the water binding and maintain structural integrity. Beneficial effects can be achieved also in low-sodium products or phosphate-reduced products.

"Texturing Low-fat Processed Meat Products with Fruit Fiber," Frank Mattes, president, Herbstreith & Fox Inc., usa@herbstreith-fox.com, www.herbstreith-fox.com
—Summary by Richard F. Stier, Contributing Editor

Shear Forces on Water Binding of a Fruit Fiber



Source: Herbstreith & Fox Inc.

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See Food Master-*INGREDIENTS*, p. 102-104

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Phosphates Friendly in Meats

Phosphates are extremely valuable food ingredients used in a wide range of meat and poultry products. In processing operations, phosphates act synergistically with sodium chloride (salt). The addition of phosphates allows operators to reduce the amount of sodium used in formulations, and they also compensate for the oxidative effects of sodium chloride. Phosphates bind different proteins than salt, which enhances solubilization and hydration of proteins. Phosphates and salt also allow unbound myosin to form sols upon mixing and gels when heated. This helps to optimize water-holding capacity and reduce losses during cooking and cooling. Ultimately, use of phosphates will enhance the succulence of the final meat or poultry product.

Phosphates maintain the quality of both fresh and frozen seafood. Alone, they inhibit lipid oxidation (which detracts from the taste of the food), may accelerate the development of cure color, impart cryoprotection to native proteins (which means the food can be frozen and thawed without loss of product quality) and reduce moisture losses during freeze/thaw. Phosphate blends containing potassium will help compensate for diminished water-holding capacity in low-pH meats. Phosphates are also extremely valuable when it comes to maintaining seafood quality. They help minimize myofibrillar protein degradation, which can minimize post-mortem moisture loss. This helps to ensure compliance with meeting net stated weight.

Heat-processed seafood treated with alkaline phosphates has an elevated temperature at which protein

Phosphate Functions

- Inhibit the development of warmed-over flavor (WOF).
- Inhibit oxidation of lipids.
- May accelerate cure color development.
- Impart cryoprotection to native proteins during frozen storage.
- Reduce thaw-drip loss.

Source: Prayon Inc.

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denaturation occurs. This reduces the potential for over-cooking and losses during cooking and cooling.

If used in heat-processed canned or pasteurized seafood (tuna or shrimp), phosphates can minimize the potential for struvite (a naturally occurring magnesium-based crystal that looks and acts like glass) formation by acting as a sequestrant. When used in previously frozen and/or spawning salmon to be canned, sodium tripolyphosphate can help retain sarcoplasmic protein within the cell, which minimizes the potential for the formation of a surface curd during the high and lengthy heat treatment of canning.

One of the most useful applications of phosphates is in the mechanical peeling of shrimp. Dipping shrimp in a solution of sodium tripolyphosphate (pH 9.5) allows reaction with collagen and improves the ability to separate the shell from the flesh. This aids the consumer by increasing shrimp meat yield without adding moisture.

Phosphates, a GRAS ingredient, also have the ability to soften water, bind metal ions that can act as pro-oxidants and enhance stability in atmospheric (non-vacuum) packaging applications.

"Phosphate vs. Phosphate-free Meat, Poultry and Seafood Applications; What Works and Why," Lucina E. Lampila, food scientist, Prayon Inc., lucinalampila@prayoninc.com, prayoninc.com

—Summary by Richard F. Stier, Contributing Editor

Antimicrobials in Prepared Foods

Lactic acid bacteria are used in much commercial fermentation such as breads, dairy products and vegetables such as sauerkraut and meats. Lactic acid bacteria also produce a wide range of compounds that have antimicrobial activity. These include bacteriocins, which are peptides of various sizes and activity, organic acids and other molecules. Live bacterial cultures also have bacteriostatic or bacterio-



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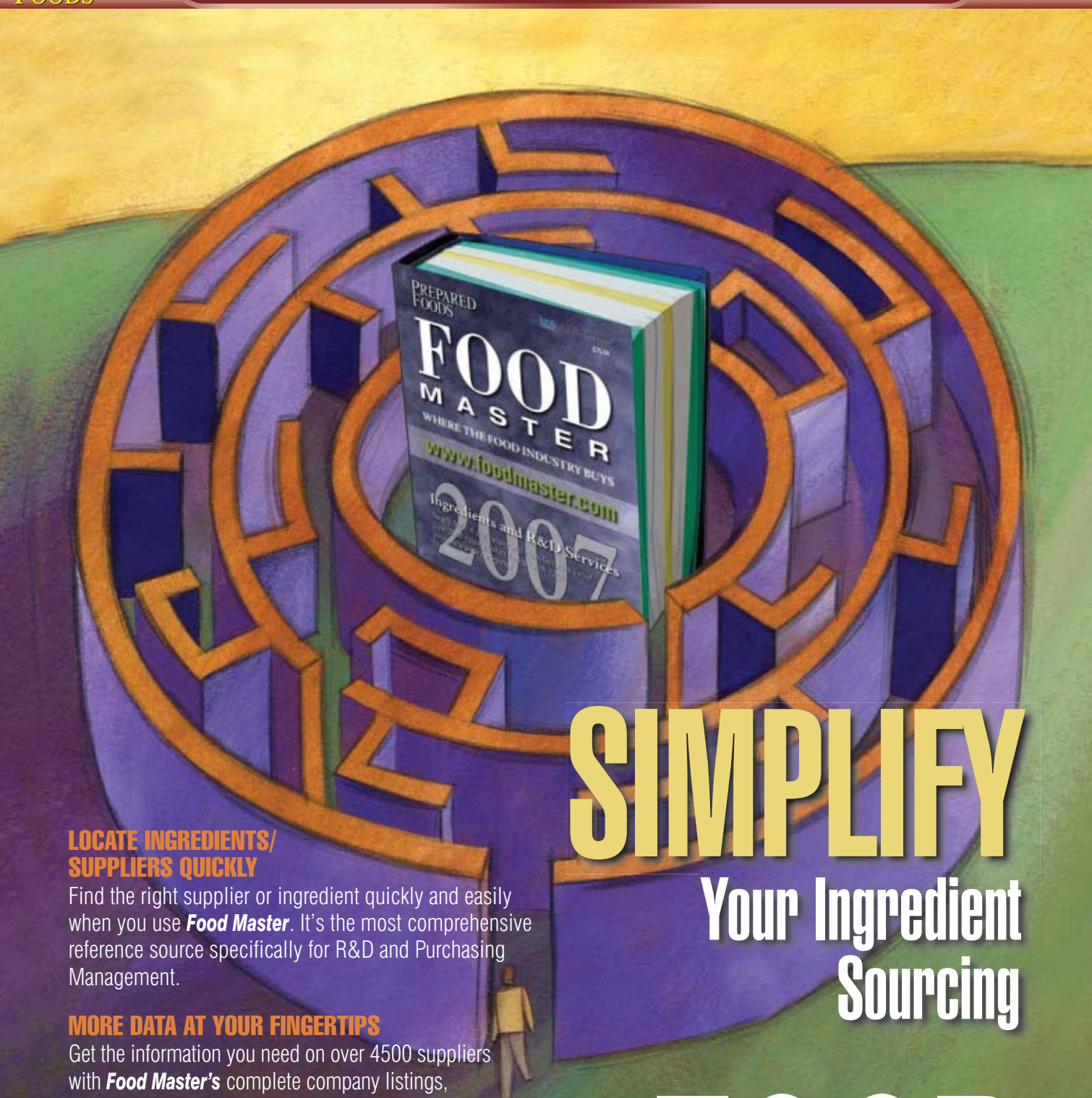
cidal activity against other organisms, including microorganisms of public health significance.

Bacteriocins produced by lactic acid bacteria have received a great deal of press recently. Among these compounds are nisin, lactococcins A, B, M, Gα and Gβ, pediocin, leucocin and propionicin. Nisin is the most widely recognized of the bacteriocins. It is produced using selected strains of *Lactobacillus lactis* and is active against a wide range of Gram-positive bacteria. Pediocin has sparked interest in that it has good activity against *Listeria spp*. The ability of bacteriocins to inhibit microorganisms and preserve or protect foods is a function of moisture content, pH, temperature and concentration of the compound itself. Bacteriocins work to enhance shelflife through these barriers (see chart "Multiple Barriers"). As an example, bacteriocins can be more effective in products with reduced pH values.

Fermentates are the end result of actively growing cultures that have metabolized certain organic substrates. They consist of metabolites produced by the cultures, including any antimicrobial compounds. They are less refined and may be added to food products, where they may exhibit antimicrobial properties. Production of fermentates is less expensive than more highly refined bacteriocins.

Fermentates may be used in a range of products such as cottage cheese, salad dressings, sauces, dairy desserts and even mashed potatoes. When selecting a product for use, it is absolutely essential that the product development specialist understand the products and process operations in question. One must take into account whether the goal is pathogen control or microbial spoilage. One also needs to understand the microbial load of the food and what the target organism or organisms are. As an example, the addition of fermentate to a blue cheese salad dressing has been





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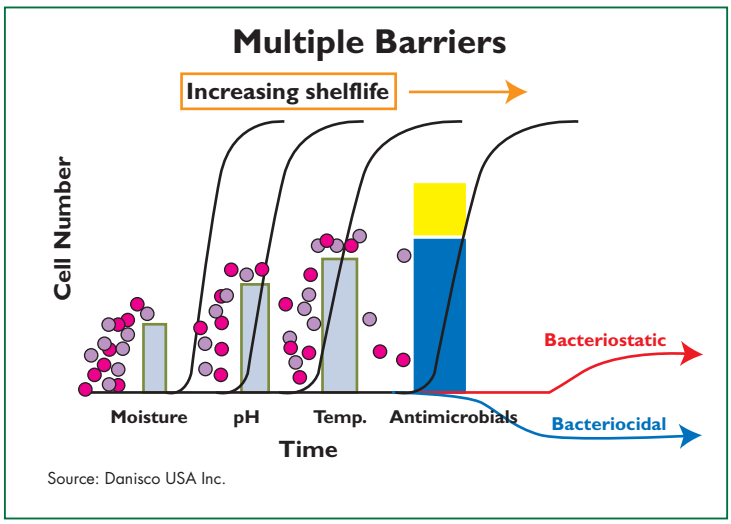
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Source: Danisco USA Inc.

The ability of bacteriocins to inhibit microorganisms is a function of additional barriers such as moisture content, pH and temperature. Bacteriostatic antimicrobials greatly reduce microbial counts, while bacteriocidal compounds kill microbes.

shown to be effective in controlling spoilage by yeast. A product without any fermentate reached counts of 1,000,000/g within 12 weeks, whereas products formulated with 0.5% and 1.0% fermentate had yeast loads of approximately 1,000 and less than 100 after 16 weeks. Similar results may be seen with mashed potatoes inoculated with *Bacillus cereus* spores. Product with fermentate that was held at 8°C failed to reach a total load of 1,000,000/g in 70 days, whereas product without fermentate took approximately 25 days to reach that level. pf

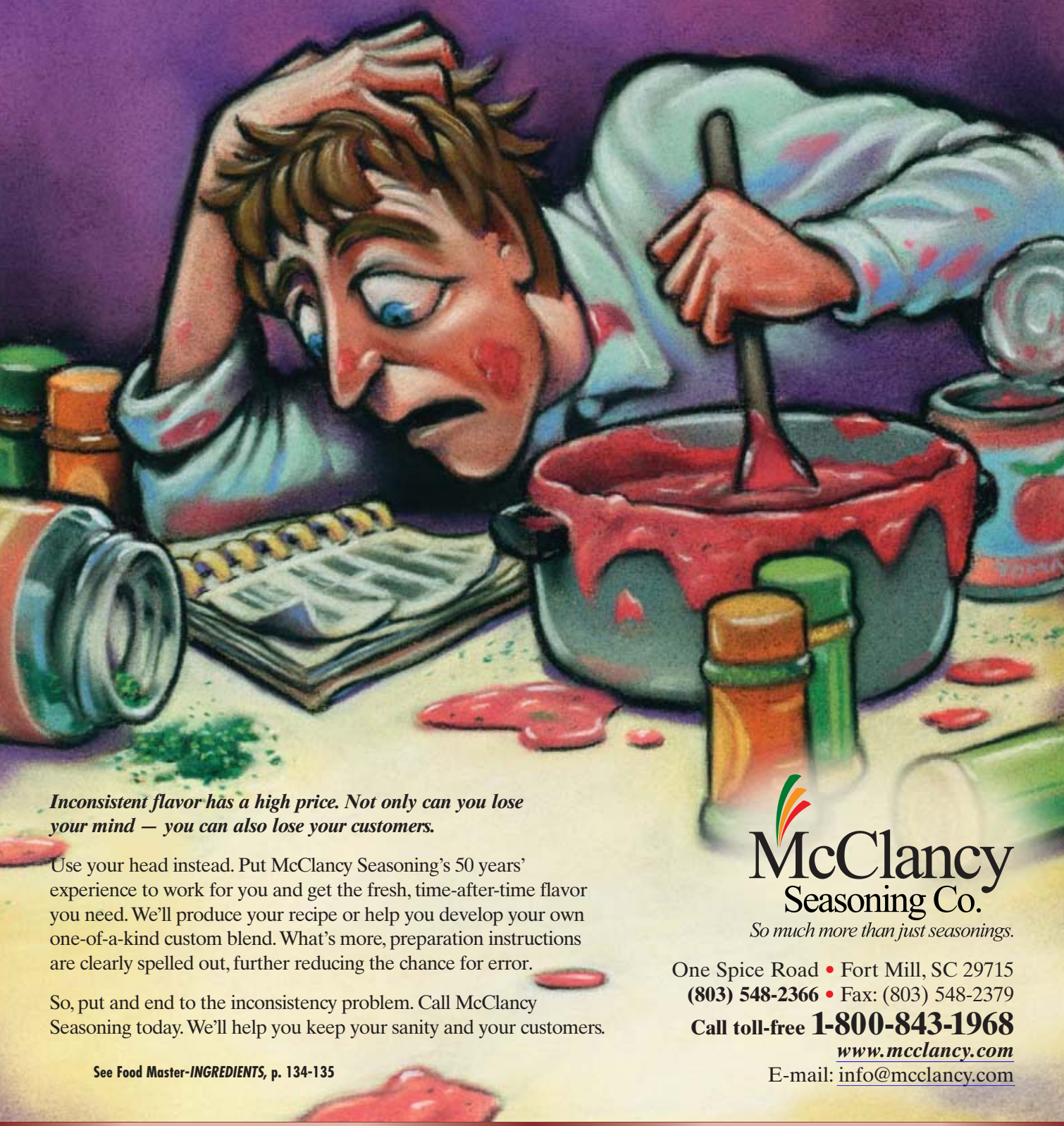
"Antimicrobial Fermentate Applications in Ready-to-Eat Foods," Larry R. Steenson, technical applications director, Danisco USA Inc., larry.steenson@danisco.com

—Summary by Richard F. Stier, Contributing Editor



See Food Master-*INGREDIENTS*, p. 90-91

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Sunday, October 14, 2007

12:00 - 4:00 p.m. **Everglades Adventure**
Travel the woven waterways of 10,000 islands while solitude envelopes you. You may see the snout of a manatee or the grace of dolphins swimming, birds, plants, and marine life.
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12:30 p.m. **Golf Tournament**
The Naples Grande golf course has challenges to put you to the test, yet it remains forgiving enough to remind you that golf is, after all, supposed to be fun.
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1:00-5:00 p.m. **Pre-Conference Workshops**
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Lip service to innovation ends where the budget begins. Successful innovation management depends on the steady long term funding that builds a continuous flow of new ideas for your market. Funding must be matched by an informed leadership team that is both aggressive around expectations and understanding of failure. This workshop will take a hard look at strategies that succeed and strategies that doom a company to low margin slow follower status. We will look at ways to help participants build their case for their innovation budget.
Christopher W. Miller, Ph.D., NPDP, PDMA

2) Developing New Product Concepts
Responsible for developing new product concepts to fill your innovation pipeline and not sure how to get started? This workshop is a step-by-step guide for building new product concepts from task identification and idea generation through initial screening.
Andre Csapo, Director Discovery & Innovation, PDMA

3) The Creative U
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Bree Gillespie, Director, Discovery & Innovation, PDMA

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Monday, October 15, 2007

7:30-8:30 a.m. **Breakfast Buffet**
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8:30-8:45 a.m. **Opening Remarks**
Peter Havens, Group Publisher and Claudia O'Donnell, Editor-in-Chief, *Prepared Foods*

8:45-9:30 a.m. **Keynote: Convenience as Defined by the Generations: Boomer, Gen Xer and Millennial**
Speaker: Larry Wu Jr., Vice President, Consumer Strategist, Food and Beverage, Iconoculture
"Convenience" conjures up images of a speedy kitchen for consumers, but mealtime stress plays out differently for each generational consumer segment. Time is not always the primary driver, and the definition of kitchen convenience varies by age. How does this "Ready, Set, Go!" behavior differ by each generation? What is the impact on food choices, and how can these differences be applied to product development, packaging and marketing strategies? Wu's experience as R&D director with Starbucks, as well as with CH Guenther & Son, General Foods Corporation and Campbell Soup, gives him real-world experience for realistic advice.

9:30-10:00 a.m. **Understanding La Comida Latina**
Speaker: Ricardo Lopez, President, Hispanic Research Inc.
Hispanic culture revolves around food. Neighborhood selections are even based on the availability of Latino foods. This unyielding attitude affects everyone in the food industry and is changing the way America eats. However, understanding Latino food is not easy. Latinos come from some 20 different countries, each with a unique food heritage. In addition, Hispanics demand new prepared foods to go with their new American lifestyle. This presentation examines Hispanic food attitudes and addresses Latino food needs.
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10:00-10:30 a.m. **Refreshment Break**
Sponsored by Flax Canada 2015

10:30-11:00 a.m. **Fads and Fundamental Changes, Tracking the American Consumer**
Speaker: Joe Derochowski, Director, NPD Group
Dining out or dining in. Snacking or sit-down meals? What do Americans think and do? Utilizing research from 30 proprietary databases and 31 years of trend tracking, a revealing look explores what, where, when and how Americans eat. Year-to-year changes in eating habits can be small but surprising, while significant changes emerge over time.

11:00-12:00 noon **Exploring Tumultuous Teens**
Facilitators: Bryan Urbick, CEO & Chairman, and Abel Westerhof, COO & Director – Consumer Knowledge Centre Ltd
Targeting the critical teen market is a challenge for food manufacturers. Many companies are resigned to lose consumers during these years in the hope that teens will again be brand loyal during adulthood. Mintel has called teens the "ignored demographic." Learn from a live teen panel discussing food and beverages in the context of their lives, what is important to them and what is not. Hear their views on shopping for food, eating in versus out, choosing brands and products, product winners and losers, and, most importantly, their reasons why. Audience participation is encouraged in an extended Q&A session.
Sponsored by IFF

12:00-1:30 p.m. **Luncheon**
Sponsored by California Raisin Board

1:45-2:30 p.m. **Obesity: A Defining Issue in Health and Wellness**
Speaker: Barb Stuckey, Executive VP of Marketing, Mattson
New products ideally address all consumer desires, from indulgence to healthy eating. With the current "obesity crisis," how can this be accomplished ethically, yet profitably? What marketing and product development tactics assist food manufacturers in finding overlooked opportunities? Primary research is unveiled providing insights on new concepts offering consumers hope, encouragement and help in weight and overall health management.

"Fascinating, I liked seeing and hearing a live panel"

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To register, contact Jenny Bogdajewicz at 630-694-4353, Bogdajewiczj@bnpmedia.com or www.PreparedFoods.com/npc



OCTOBER 14-17, 2007 Naples Grand Resort, Naples, Florida

2:30-3:00 p.m. **Refreshment Break**
Sponsored by Flax Canada 2015

3:00-3:40 p.m. **Delving into Demographics**
Speakers: Lynn Dornblaser and David Jago, Directors, GNPD Consulting Services
Consumers want what they want, but what do food manufacturers think they want? This fast-paced presentation discusses new products around the globe that are being positioned for specific demographics. What intriguing new products are for children, for women, for consumers concerned about heart health or digestive health, for those looking for familiar indulgence or searching for novel, creative new foods and beverages? Insights and information will light the creative spark in R&D and marketers alike.

3:40-5:00 p.m. **Global Product Sampling: Delivering to Consumer Niches**
Presented by: The consulting staff of the Mintel Global New Products Database (GNPD)
Sometimes listening is not enough. Tasting, touching and seeing firsthand some 70 new products launched around the world provides invaluable, impossible-to-get information. Products will be grouped by key consumer niches.

6:00-7:00 p.m. **Cocktail Reception**
Sponsored by Hormel Foods Corp.

7:00-7:30 p.m. **The Spirit of Innovation Awards Ceremony**
Join us in celebrating the industry-nominated, innovative product development teams that recently introduced a new product in foodservice and retail markets. Discover how these product development teams operate.
Sponsored by Ventura Foods

7:30-9:00 p.m. **Spirit of Innovation Dinner**
Join us for a casual buffet featuring Floridian cuisine. Relax and enjoy great food and conversation. Share your thoughts on today's sessions. Immediately following the Awards Ceremony.
Sponsored by Ventura Foods

"Excellent speakers, very interesting presentations"

"Better understanding of worldwide trends in foods and flavors"

Tuesday, October 16, 2007

7:30-8:30 a.m. **Breakfast Buffet**
Sponsored by Ocean Nutrition Canada

8:30-9:15 a.m. **Positioning "Healthy" Products for Success**
Speaker: Valerie Skala Walker, Vice President, Consumer & Shopper Insights, Information Resources, Inc.
As more prepared food products incorporate health-related benefits, it is increasingly important to understand the factors that help or hinder their success. What are some of the most successful new brands with health-related positions in the marketplace, and what are the factors contributing to that success? From the words used to describe a product's features and benefits to the dollars spent on advertising, what makes one brand outsell its rivals?

9:15-10:00 a.m. **Exploring Tumultuous Teens: Insights and Take Aways**
Speaker: Bryan Urbick, CEO & Chairman, Consumer Knowledge Centre Ltd
As a follow-up to Monday's thought-provoking panel of teens, additional insight and analysis will provide the audience a better understanding of this important and mystifying consumer segment.
Sponsored by IFF

10:00-10:30 a.m. **Refreshment Break**
Sponsored by Qualisoy

10:30-11:00 a.m. **Food and Flavor Trends Through Foodservice Operators' Eyes**
NEW
Speaker: Kevin Higar, Director Operator Product Development, Technomic
The foodservice industry is both a vital customer segment of packaged foods companies and also a source of inspiration for new product ideas. What are current and emerging food developments in this arena? What culinary trends, flavor profiles and emerging concepts are operators utilizing to satisfy loyal customers and attract new ones? What strategic consumer trends drive the menu items of today and tomorrow? Most importantly, how do prepared food suppliers help operators succeed in this dynamic environment?

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11:00-11:35 a.m. **If it Tastes Good, is it Bad?**
Speaker: Dr. Gary Beauchamp, Director, Monell Chemical Senses Center
Foods or beverages will not be consumed unless they taste good. Yet it sometimes seems as if most of what tastes good is actually bad for us--especially sugar, salt and fat. Also, what is good for us often is not so well liked, such as vegetables. These generalizations are particularly pertinent when considering children. This presentation discusses why we like and dislike what we do, how these preferences might be modified, and why recent discoveries in how our flavor sensory systems work may provide new approaches to healthy enhancement of food flavors.

11:35-12:00 noon **Collegiate Education Awards**

12:00-1:00 p.m. **Luncheon**
From Culinary Inspiration to New Product Innovation
A multi-sensory exploration of the leading-edge culinary trends today that are shaping the way we experience food tomorrow.
Sponsored by Givaudan

1:15-3:45 p.m. **Innovation Panel**
Innovation has been defined as the successful implementation of creative ideas within an organization. Through innovation, companies lift their products above commodity status to provide more profitable foods and beverages desired by consumers. What does it mean to be innovative? What are pitfalls to avoid? Which tools and opportunities can be leveraged? This accomplished panel will offer perceptive suggestions.

1:15-1:45 p.m. **Panelist 1: Lynn Gordon, President, French Meadow Bakery & Cafe**
French Meadow Bakery has nationally introduced cutting-edge, healthful and even controversial products such as Men's Bread, Healthy Hemp Bagels and Fat Flush Sprouted Tortillas. Founded in 1985, French Meadow is the longest continuously certified organic bakery in the country and has been twice named by *Bon Appetit* magazine as one of the Ten Best bread bakeries in the U.S. With an unorthodox approach, business success has followed, with Gordon being named Minnesota's Small Business Person of the Year in 2005 by the Minnesota district office of the U.S. Small Business Administration.

1:45-2:15 p.m. **Panelist 2: Jeff Bellairs, Director of the Worldwide Innovation Network, General Mills**
General Mills is building relationships with external partners that are enhancing, complementing, and accelerating innovation already taking place internally. Coined "Open Innovation", this initiative is helping the company evolve and expand its innovation efforts. General Mills has found that by leveraging new products and technologies created outside the company, it is better prepared to meet the changing demands of the marketplace.

2:15-2:45 p.m. **Refreshment Break**
Sponsored by Wild Flavors

2:45-3:15 p.m. **Panelist 3: Phil Roos, President & CEO, Arbor Strategy Group**
What are the key drivers of winning innovation, and how can organizations leverage them to drive sustainable growth? Creativity, consumer insights and rigorous business analysis all play a central role, but a deeper understanding of innovation itself is also critical. The Arbor Strategy Group's work has uncovered a simple yet powerful truth: innovation is evolutionary and tends to follow a fairly predictable pattern. Understanding these patterns and the "innovation evolution model" can help organizations identify high-potential, future opportunity space and translate it into innovation that is differentiating and creates real value.

3:15-3:45 p.m. **Panel Q&A Session**

6:00-7:30 p.m. **Networking Reception**
Relax, unwind and enjoy mouth watering appetizers and thirst-quenching libations.
Sponsored by National Starch Food Innovation

7:30 p.m. **Dinner on your own.**

Wednesday, October 17, 2007

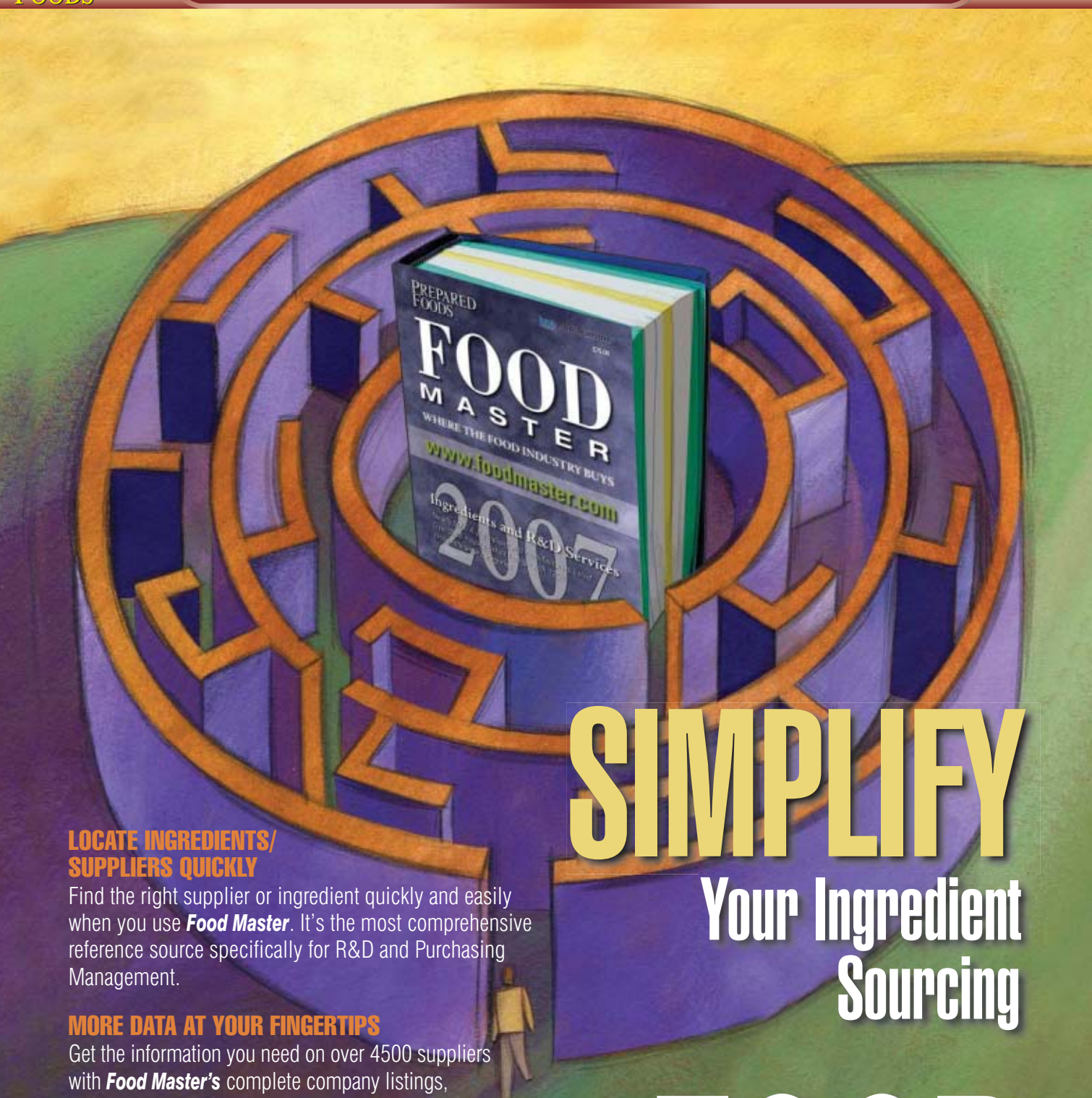
7:30-8:30 a.m. **Breakfast Buffet**
Sponsored by Mane, Inc.

8:30-10:00 a.m. **Differentiating Products with Innovative Flavor Combinations**
Interactive Tasting Session
Speakers and Facilitators: Dr. Victor A.L. Gielisse, CMC, Associate Vice President, and Ronald De Santis, Director, Continuing Education's Industry Solution Group, The Culinary Institute of America
Consumers demand variety, stimulation, authenticity and satisfaction from foods and beverages. This interactive session will demonstrate the use of ordinary ingredients to bring extraordinary results by creating flavors that entice consumers. Two great culinary educators exhibit their skills and enlighten New Product Conference attendees by providing irreplaceable knowledge through the experience of tasteful samples.

10:00-10:30 a.m. **Closing: Thank you from New Products Conference Organizers**
Grand prize drawing and more!
You could win roundtrip airfare for 2 anywhere in the US! That's not all, you'll have a chance to win other prizes too. Don't miss Mintel's Global New Products to take home.

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No Harm, No Foul(ing)

Anyone who has scoured a pan to remove burnt-on food until their knuckles were raw should be able to relate to the equipment fouling problem food manufacturers face when using UHT (Ultra High Temperature) processing to sterilize products. Ironically, those busy (scouring) household cooks escalated the popularity of UHT processing by demanding convenient, ready-to-use foods that taste good and are good for you.



While UHT sterilization preserves the flavor, color and nutritional value of food, manufacturers face processing challenges when running high viscosity products such as sauces and soups. Traditional modified food starches increase viscosity during processing, increasing the propensity for product to cook on or foul. Manufacturers can face considerable downtime because equipment has to be cleaned frequently.

"Most prepared foods contain modified starch, and food manufacturers have been looking for a specialty starch that remains at a low viscosity during UHT processing for years," says Joe Klemaszewski, senior scientist, dairy applications, for Cargill Texturizing Solutions (CTS). "Our new, patented DeliTex modified tapioca starch offers a unique thin-thick functionality that will benefit manufacturers as well as foodservice providers and consumers."

Test runs conducted with cheese sauce compared the performance of modified corn starch, modified tapioca starch and DeliTex tapioca starch during UHT processing. Over time (180 minutes), the back pressure needed to process the sauce formulated with modified corn starch increased from approximately 6.0 bars to 8.0 bars. While pressure levels remained constant for modified tapioca starch, it required 6.5 bars to process, compared to 4.0 bars for sauce formulated with DeliTex. The low-viscosity DeliTex sauce flowed more easily through the processing equipment, thus decreasing the fouling effect. (See chart "Fouling with UHT Cheese Sauce.")

Reduced fouling means improved product quality and longer production runs, which boosts operating efficiencies. Low viscosity during sterilization also facilitates more efficient heat transfer, maintaining hold times throughout the process and reducing energy consumption.

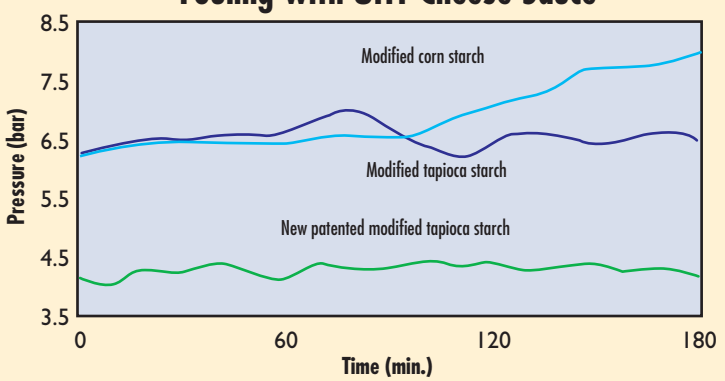
> The low-viscosity sauce with the new patented starch flowed more easily through the processing equipment, thus decreasing the fouling effect.

Unlike traditional modified starches, DeliTex starch granules stay intact during high heat and shear, so viscosity is consistent throughout UHT processing. Since processors do not need to add starch to produce an end product with the desired viscosity, processors may reduce ingredient costs. Further, the tapioca-derived starch enhances food functionality without unwanted flavor side-effects often associated with traditional maize starches.

Sauces and soups formulated with DeliTex maintain low viscosity after UHT processing, so the product can be concentrated but keep its pourablity. Concentrated products made with traditional modified starches are too thick to pump and fill. Foodservice sauces as well as consumer products can be packaged in smaller containers to save shelf space and reduce packaging waste. Foodservice professionals will realize the advantages of the thin-thick profile DeliTex provides during the second heating process. Prepared foods formulated with the starch develop full viscosity when reheated and remain stable longer with reduced skin formation. Even concentrated products have a comparable viscosity to the standard product after reconstitution. PF

For more information:
Cargill, Minneapolis
Joe Klemaszewski • 952-742-3327 • joe_klemaszewski@cargill.com
www.cargilltexturizing.com

Fouling with UHT Cheese Sauce



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■ **Enhanced Trait Soybean Oils: Health and Functionality Benefits**

Richard Galloway, Oils Expert, will discuss low-linolenic soybean oil as well as others currently in the research pipeline including increased oleic, low-saturate, increased omega-3, and high-stearic.

■ **Oil Processing Techniques to Reduce Trans Fatty Acids**

Gary List, Chemical Technology Expert and Lead Scientist for the USDA, will discuss interesterification, blending, degumming, antioxidants and gelling techniques.

Presenters



Gary List
Chemical Technology Expert and Lead scientist at the United States Department of Agriculture's National Center for Agricultural Utilization Research



Richard Galloway
Oils Expert, President of Galloway and Associates, LLC



Claudia Dziuk O'Donnell
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Organic Cream of the Crop

Kerry Hughes, R&D Applications Editor



It seems odd that whenever one purchases a great cup of organic coffee, often the only creamer options available are powdered or non-natural. It seems pointless to ruin a great cup of organic coffee by dumping in non-organic (and often non-natural) creamers.

The lack of organic creamer options available at restaurants and cafés seems even stranger when considering the market demand for organic dairy beverages and products. In fact, according to Sundale Research (www.sundaleresearch.com), in their recent report entitled, "State of the Industry: Organic Foods and Beverages in the U.S., 2007," organic dairy products have overtaken regular organic beverages and are now the second largest organic industry segment.

One company that is working on changing this is Diehl Food Ingredients. It recently released Jerzee® Organic creaming agents made from organically sourced ingredients such as organic skim milk solids and organic oils. According to Dennis Reid, vice president of marketing and technology, "We are the first to market with a certified organic powdered creamer and also recently a certified organic powdered vegetable fat called Centennial® Organic. Both are unique dairy protein-based systems using specially processed organic skim milk solids that deliver the necessary functionality and stability for a high-fat, creamer-type system. They are also both trans fat- and cholesterol-free."



The Jerzee system of organic creaming agents imparts creaminess, mouthfeel and milky characteristics to dry-based formulations, while maintaining the organic label. According to Reid, they also can be used as organic alternatives to conventional powdered coffee whiteners. As full ingredient systems, they are intended for use in formulating organic dry hot beverages, soups, sauces, dressings, bakery mixes, coffee whiteners, nutritional powders and meal replacement products. Diehl Organics hopes that manufacturers will now expand their organic product line offerings (as these ingredients have not been available to them in the past) and introduce such products as dry coffee creamers, cappuccinos, hot chocolates and chai-tea beverages. pf

For more information:
Diehl Food Ingredients Inc., Brentwood, N.Y.
Dennis J. Reid • 314-497-0920
dennisreid@diehlinc.com • www.diehlinc.com
www.sensoryeffects.com

Organic Dairy and Other Beverage Sales in the U.S.

Type of Food	2011 (est.) ($ Millions)	2006 ($ Millions)	2005 ($ Millions)	Annual % Change (2005-2006)
Dairy	5,148	2,534	2,142	18.3
Beverages	4,587	2,320	2,002	15.9

Source: Sundale Research, 2007

Everyday Aloe

Kerry Hughes, R&D Applications Editor

What is the most-used herbal ingredient across cultures? The answer may be surprising: aloe. Not just for sunburns anymore, aloe is rising in popularity in the U.S. as a drink to promote wellness. Aloe has shown steady growth over the past seven years in the health food market and has consistently ranked in the top 20 best-selling herbs during this time. In the Hispanic foods section of the mass market, aloe drinks are showing over 100% growth annually. Asian and Hispanic grocers in the U.S. are selling fresh aloe leaves, and many high-end health food stores, such as Whole Foods, carry the fresh aloe leaf in their produce section.



Aloecorp, a global leader in the growing, processing and science of aloe vera, is changing the perception that liquid aloe is a better option than the powdered product. They have introduced Qmatrix®, a process that extends aloe shelflife without preservatives and retains a "same as fresh" quality on reconstitution. Qmatrix aloe also has excellent dispersion and dissolution properties, something that other dry aloes do not. Qmatrix processed powder can be sized to a 10-mesh with a crystal flake appearance; it immediately disperses when added to water; and it goes into solution without clumping.

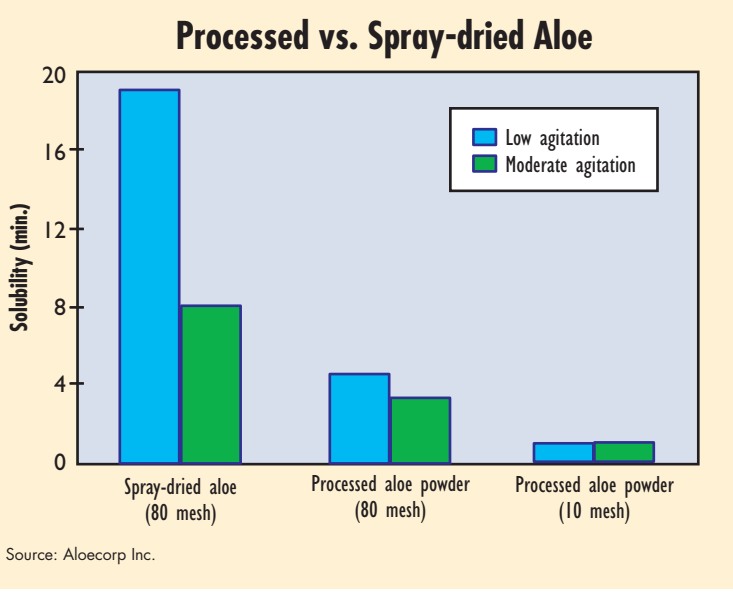
The Qmatrix processing technology is the result of the last decade of aloe research. In 1999, in *Planta Medica* and in 2004, in the journal *International Immunopharmacology*, the retention and enhancement of aloe bioactivity was found by the patented modified aloe polysaccharide (MAP) process. A proprietary dehydration process was added to this that can be characterized as low heat, short time (LHST) and has been proven to retain a higher level of heat labile components and sensory attributes, when compared to any other dehydration technology available. In fact, in blind taste tests, testers could not tell the difference between fresh and reconstituted fresh food products dehydrated by this technology.

According to Ken Jones, chief science officer for Aloecorp, "The sensory attributes of the finished product are also improved, as the need for vigorous and extensive mixing is eliminated. It also allows formulation innovations such as dry mixes or drinks in packet form that completely dissolve." Aloecorp has performed tests to guarantee a "same as fresh" bioactivity of the new processed powder.

Jones adds, "Most people are familiar with aloe as a dietary supplement or its use in cosmetics; what they don't realize is that aloe is an approved food additive for use as a flavoring agent, so there is a lot of opportunity for formulation in nutraceutical and conventional foods." Another misconception, he explained, is that aloe is a dangerous plant or laxative. However, on the market, aloe products in food or supplement form are processed to eliminate the anthroquiniones (the laxative components) to establish safety levels appropriate for daily use. pf

For more information:
Aloecorp Inc., Lacey, Wash.
Barbara Apps • 800-458-ALOE (2563); 360-486-7400
info@aloecorp.com • www.aloecorp.com

When compared to traditional spray-dried aloe (80-mesh size), the company's uniquely processed aloe powders (80-mesh and 10-mesh size) take less time to be solubilized.



Source: Aloecorp Inc.

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Potato's Potential

Barbara T. Nessinger, Associate Editor



The potato is one of the most versatile foods in human history. Its uses in recipes and as a diet staple are endless. Now, even more value can be extracted from the potato—potato protein is the basis for a new non-starch based ingredient with exciting application and marketing opportunities.

AVEBE, the Dutch potato starch group, has formed a new subsidiary company, Solanic, with the specific task of creating new value from potatoes. By refining, developing and marketing non-starch based ingredients from the potato, Solanic has opened up many possibilities for food formulation.

Cleaner Labeling Advantages

Potato protein's labeling of a more "natural" type has consumer appeal and is seen as a driver to a more home-style experience. Natural is often perceived as better by the consumer. The advantages of potato protein are its clean flavor, variety of functionality and its vegetable origin with similar properties to animal proteins. It also offers numerous application possibilities.

Potato proteins are also non-GMO and may be able to replace emulsifiers in low-fat products. These proteins have nutritional advantages, as well. They are satiety-enhancing, meaning they act as a hunger suppressant. Potato proteins fit with a cholesterol-lowering diet, have excellent digestibility and an equally excellent balanced amino-acid composition.

Potato protein is also hypo-allergenic, which is of great interest to many consumers. In comparison to peanuts, eggs, milk, soy and other protein-based ingredients, potato has shown low or no allergic reactions.

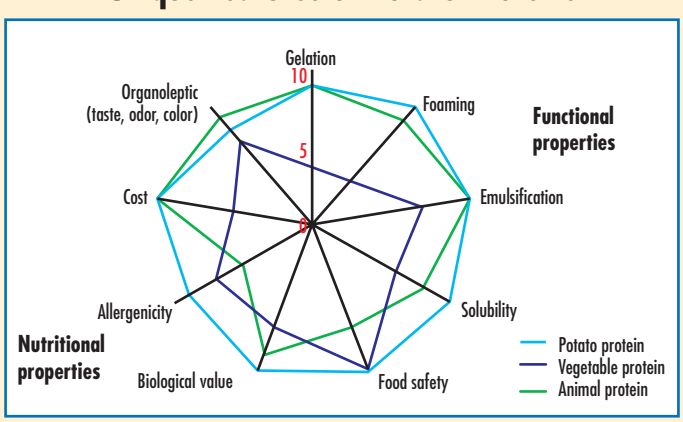
Functions and Attributes

Functionally, potato protein has good foaming properties. Attributes include foam stability, whippability and gelation. Its properties can be used to create aerated consumer products at low formulation levels that can help reduce costs, due to its similarity to egg white protein. Potato protein exhibits good solubility and stability in appearance and is available in powder form (protein content >90-95%) and liquid form (protein content >15-20%).

Solanic's potato protein has many application possibilities, including mousses, meringues, low-fat yogurt and imitation whipped cream, to name a few. Additionally, it can be used as a replacer for egg albumin, casein, fat and hydrocolloids. pf

For more information:
Solanic, Veendam, The Netherlands
U.S. contact: Anne Tieleman • 609-520-1400
Ann.Tieleman@AVEBE.com

Unique Features of Potato Proteins



Source: Solanic, in cooperation with WUR, NIZO

This chart shows the various functional and nutritional properties of potato protein, as compared to vegetable and animal protein.

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PREPARED FOODS

abstracts



Luxury Low-cal Snack

In keeping with current health trends, a 200-calorie snack has much appeal. The Almond Board of California challenged food science students to develop such a snack. This year's winning entry, Cran-Almond Treasures, created by students at Pennsylvania State University, is an indulgent, nutritious snack in the form of a cookie studded with almonds and dried cranberries, then dipped in dark chocolate. In addition to the indulgent aspects, the cookies naturally contain antioxidants, vitamin E, calcium, fiber, magnesium and potassium. Almond Board of California, www.AlmondsAreIn.com/studentcontest

Sea(salt)-worthy Agreement

Reducing sodium without sacrificing taste just got easier. U.K.-based Low Sodium Sea Salt Company has reached an agreement with Nexcel Natural Ingredients to distribute their SOLO® brand low-sodium sea salt to food manufacturers throughout the U.S. market. The low-sodium salt has the ability to reduce sodium content by as much as 60% without sacrificing taste or functionality. Nexcel Natural Ingredients, Division of Spectrum Foods Inc., Rob Kirby, 217-391-0091, ext. 12, www.soloseasaltusa.com, rkirby@spectrum-foods.com

Totally Tortilla

As tortilla consumption in the U.S. continues to grow, one manufacturer has developed a variety of creative concepts to both tantalize the taste buds and address consumer demand for health and nutrition. Cargill Foods' affiliate Horizon Milling has created tortilla prototypes that integrate traditional taste, flavor and texture with whole-grain benefits and exceptional processing performance. WheatSelect® white spring whole-wheat flour delivers the health benefits of whole-grain nutrition with the light color, soft texture and mild taste preferred by consumers. Horizon Milling (an affiliate of Cargill), www.horizonmilling.com

Enzyme Excitement

Three new products were highlighted at the April 2007 Supply Side East Trade Show. American Laboratories' Ameri-Flex™ is designed for special joint care needs, while Panc-Zyme™ can be used in formulations to hydrolyze proteins such as those in meat, milk and cheeses and has application uses with nutritionals, tablets and blends. Chymotrypsin is a serine proteolytic enzyme used in many nutritional formulas. American



Laboratories Inc., Lisa Hammers, 402-339-2494, www.americanlaboratories.com



Ultra Fruits

Product development experts looking for confectionery snacks that address consumers' desires for healthier snacks that provide vital nutrients in a convenient form need look no further. Danisco's new line of fruit snack prototypes offers grab-and-go nutrition in a unique combination of indulgence and fortification. Created using products from the Danisco portfolio, including GRINDSTED® pectin, Danisco flavors and Litesse® Ultra™ polydextrose, the new line is designed for consumption during various parts of the day and also targets different gender and age preferences. Danisco Sweeteners, Donna Brooks, 800-255-6837, ext. 2521, donna.brooks@danisco.com, www.danisco.com

Sweet Rewards

Consumer research shows that low-calorie foods and beverages are part of the lifestyle of millions of men and women who want to stay in good health and control their weight. NutraSweet®'s aspartame helps provide a variety of good-tasting, low-calorie products that are easily incorporated into a healthy lifestyle. Benefits include sweet and clean taste, enhanced flavor and kosher/halal-certified. Premium Ingredients International, Nic Dam, 630-868-0314, Nic.Dam@Premiumingredients.com

Get Smart

A leading global manufacturer of healthy ingredients provides innovative solutions to customers with nutritionally balanced, great-tasting choices for consumers. Roquette America Inc.'s Smart Calories™ solutions deliver multiple health benefits including added fiber, enriched protein and reduced sugar. Some of the items featured in their booth at the upcoming IFT show include NUTRALYS® all-natural pea protein, NUTRIOSE® soluble fiber and MALTISORB® crystalline maltitol, to name a few. Roquette America Inc., 800-553-7035, www.maltitol-maltisorb.roquette.com

Functional Fiber

Fighting obesity starts with low-calorie, high-fiber foodstuffs. The water-soluble acacia dietary fiber Quick Fibre™ fortifies beverages, dairy products, snacks, pastries and cereal bars that provide the body with essential elements for balanced nutrition and good digestion. The prebiotic function of Quick Fibre turns foodstuffs into functional products to promote health and wellness. At the upcoming IFT show, come try "Fresh 'n Healthy," the new drink with a functional kick to quench summer thirst. ALFRED L. WOLFF Inc., USA, 312-265-9889, tmarten@alwolff.us, mvb@alwolff.us, www.alwolff.com

Organic Flavors that Nature had Always Intended



Savoury Systems International,® Inc. introduces "Savorganic," a brand new exciting line of Certified Organic Yeast Extracts which can be used for flavor and flavor enhancement in savory products. Are you having trouble finding enhancers for your natural or organic products, or just want to clean up your labels for the new healthy eating habits? If so, Savoury Systems is here to help you. Our Savorganic products can improve flavor and keep labeling requirements in check. Couple these benefits with our outstanding customer service, and you've got a winning combination! Please contact us today for more information.

Savoury Systems™ International, Inc.

PO Box 5487, Branchburg, N J 08876
Phone: (908) 534-6621 ■ *Fax:* (908) 534-7979
E-Mail: customerservice@savourysystems.com
Web Site: www.savourysystems.com
Certified Organic by OTCO

See Food Master-*INGREDIENTS*, p. 169



Contact Clarification

Cevena has developed a high-viscosity fiber product called Viscofiber®, derived from either oat fiber (up to 50% β-glucan concentrate) or barley (up to 60% β-glucan concentrate). Viscofiber is GRAS-approved and kosher. Viscosity is important for such health benefits as improving cholesterol levels. Below is a clarification of contact information for an article on Cevena's Viscofiber that ran in the April 2007 *Prepared Foods*. For more information on Viscofiber and other Cevena products, please contact: Kristina Williams, director of marketing, Cevena Bioproducts Inc., 780-438-2812, sales@cevena.com, www.cevena.com, www.viscofiber.com

Organic Dairy Products

An innovator in the organic market has recently earned certification as an organic processor/handler of custom-blended dairy stabilizers from Organic Crop Improvement Association International. Tate & Lyle Custom Ingredients (TLCI) continues to develop formulas and applications in support of this avenue of consumer growth for its dairy customers. Several products, including various organic ice cream and cultured products utilizing TLCI's stabilizer blends, have been launched by TLCI's customers. Tate & Lyle Custom Ingredients, Ferne Hudson, Ferne.Hudson@tateandlyle.com

Let Them Eat Cake

A convenient, easy-to-use, enzyme-based ingredient offers manufacturers an impressive range of benefits. DSM's CakeZyme™ is a unique technological breakthrough for the cake and bakery industry that promises to enhance product quality, improve nutritional profile and reduce overall manufacturing costs. A microbial phospholipase, it enables manufacturers to use fewer eggs in their recipes and significantly enhances emulsification, resulting in lower batter density, improved batter viscosity and a delayed crumb setting. The finished product benefits from increased volume, improved crumb structure, softness and a longer shelflife. DSM Food Specialties, Teresa Sallie, 973-257-8201, www.dsm-bakingenzymes.com





Lime's the Key

Tart and tangy, Key lime captures the essence of summer and delivers a rush of citrus flavor to countless food and beverage applications. Robertet Flavors offers a delicious selection of Key lime and other lime flavors that are natural and blend well with other fruit flavors. Available in Key Lime Flavor, Key Lime Pie Flavor and Lime Flavor, the applications include beverage, dairy, pharmaceuticals/nutraceuticals, syrups, yogurt, ice cream, sorbet and more. Robertet Flavors, Gretchen Schleck, 732-981-8300, gschleck@RobertetUSA.com, RobertetFlavors@RobertetUSA.com

All Aboard!

Visitors to the 2007 IFT show will have an opportunity to explore the breadth of texture possibilities via an innovative demonstration. National Starch Food Innovation will showcase its texture expertise and the important and potential impact texture has on bakery, dairy, ready meal and beverage products. In addition to sampling an array of culinary prototypes, visitors can experience the Texture Demonstration Station. National Starch Food Innovation, David Manion, 908-685-5395, dave.manion@nstarch.com, www.foodinnovation.com

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2. October 18th 2:00pm ET
Proven health benefits for all life stages.

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BENEO™ inulin and oligofructose prebiotic fibers are the differentiating factors driving success in dairy, beverages, confections, cereals, snacks, supplements and bakery products around the world – with claims backed by science and supported by global consumer research.

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ACTIVE FOOD INGREDIENTS

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abstracts

Ingredient Allies

Two companies, one with its expertise in the dietary supplement market and the other focused on high-intensity and bulk sweeteners, have formed a strategic alliance. Novel Ingredient Services and The Ingredient House are committed to providing secure overall support services and quality in order to meet the objective of lowering production costs for manufacturers. High demand for low-cost, country-sourced ingredients has spurred this partnership, which should benefit both companies' customer bases. The Ingredient House, Rudi van Mol, 609-279-0170, rudi.vanmol@theingredienthouse.com

Nano-nutrition

A leading importer of organic ultra-pure foods is currently developing revolutionary processing technologies to enhance the nutritional power of popular new "superfruits" such as mangosteen, goji berries and acai, which are already famous for their highly nutritious content. Essential Living Foods' proprietary process, developed in conjunction with NanoSpheRx, uses a patented nano-stability technology to significantly increase both shelflife and bioavailability of the nutrients in powdered raw materials. These raw, organic powders absorb more effectively in the body and dissolve more easily into drinks and food blends. Essential Living Foods, Jennifer Hoffman, 310-571-3272, ext.105, www.essentiallivingfoods.com

Magnasweet®. The best friend a flavor ever had.



Magnasweet products are uniquely versatile flavoring agents that can be used with traditional and non-traditional ingredients alike, to promote flavors that are rounder, fuller, more pronounced.

Magnasweet can subtly alter sweetness, make mouthfeel more satisfying, and minimize unwanted aftertaste – all valuable properties for improving snack foods, coatings, soups, sauces, desserts and a host of other products.

Call us for samples and details about our entire Magnasweet line. Let us show you how a little help from a friend can go a long way.

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Bring on the Carbs and Protein

A nutrition technology company has released the results of five new studies that demonstrate the benefits of carbohydrate-protein sports drinks and energy gels. The results, from Pacific Health Laboratories, show that in studies involving athletes in sports such as running, cycling and swimming, those who consumed either a carbohydrate-protein sports drink or gel showed significantly improved performance. Muscle damage and post-exercise muscle soreness was markedly decreased, while muscle function was increased. Benefits such as greater endurance, superior hydration, increased exercise intensity and faster recovery were also reported.

For more news items delivered to your e-mailbox, visit www.PreparedFoods.com and register for Prepared Foods' *newsletter.*

Good Frying News

A new formulation has the ability to protect edible and frying oils from rancidity. Vitiva, Slovenia, introduces its INOLENS® 4 line, which offers all-natural protection and prevents changes in taste, odor and color while significantly extending product shelflife. The product is suitable for a wide range of food applications, is allergen-free and can be utilized with many types of oils. Vitiva, Dushka Dimitrijevic, +386 2 1788 87 38, www.vitiva.si Pf



What if those never-ending office interruptions stopped for 48 hours?

You could **FOCUS** on your product development challenges.

Prepared Foods' **ProductInnovationXchange (PIX)** is a product development event designed to provide senior R&D management with the **FOCUS** necessary to overcome product development issues.

PIX is completely designed around your needs. It provides your senior product development team with private, confidential meetings with the senior technical, applications and executive management teams from the industry's leading ingredient suppliers.

Your technical meetings are customized based on your product development challenges. Your meetings are highly productive because the suppliers know your specific challenges and are prepared to discuss solutions, share new technologies, unveil early prototypes and explore potential partnerships.

Prepared Foods' **PIX** is a highly efficient investment of your time. In 2 days you can participate in more than a dozen senior level, strategic product development meetings. To duplicate this in your office, might take 6 months.

ProductInnovationXchange 2008 will be held April 20-23 at The Lodges at Deer Valley in Park City, Utah. Participation is limited.

To find out how **PIX** might benefit you, please call Layne Skoyen, Event Director, at [952] 736-9373 or lskoyen@pix-change.com. Watch a short streaming video of processors sharing their experiences at **PIX** at www.pi-xchange.com.

Prepared Foods **ProductInnovationXchange**℠

"This is an event designed to eliminate the negatives of a convention atmosphere and individual company sales visits. The conference facilities and organization allows a complete focus with 10-12 suppliers and peers over a two day period. I would highly recommend to both suppliers and processors."

— Myron Cooper,
Vice President,
Technical Services
The Hain-Celestial Group

"The event exceeded my expectations. We found it very beneficial to meet with existing suppliers along with those we did not know. We were shown resources and product lines that we were unaware of prior to the meetings. Great use of my time."

— Michael Maney,
Vice President Quality Assurance / Research & Development
Dean Specialty Foods Group



Want to uncover 5 great new ideas in only 2 days?

Imagine how this could accelerate your new product development initiatives.

Prepared Foods' **ProductInnovationXchange (PIX)** is a customized product development event designed to expose senior R&D management to new technologies, new suppliers, **GREAT NEW IDEAS** necessary to overcome product development challenges.

PIX is completely designed around your needs. It provides your senior product development team with private, confidential meetings with the senior technical, applications and executive management teams from the industry's leading ingredient suppliers.

Your technical meetings are customized based on your product development challenges. Your meetings are highly productive because the suppliers know your specific challenges and are prepared to discuss solutions, share new technologies, unveil early prototypes and explore potential partnerships.

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— Michael Maney,
Vice President Quality Assurance / Research & Development
Dean Specialty Foods Group

2007 Supplier Profiles

ABF INGREDIENTS



For the first time ever, ABF Ingredients will be exhibiting at the IFT bringing together the wide portfolio of companies within its group onto one spectacular stand (number 130).

The IFT will see the launch of ABF Ingredients new visual identity and will be the first opportunity to catch a glimpse of the innovative ABF Ingredients corporate brochure. ABF Ingredients was established in 2003 to incorporate the ingredient companies within Associated British Foods and now includes AB Enzymes, ABITEC Corporation, ABITEC Ltd, Ohly, PGP International, Protient and a new business unit called Proteol which will be officially launched at the IFT. In addition, the brand migration of the former Provesta and Ohly organisations into the new Ohly global yeast extracts organisation will be a highlight.

We will see demonstrations of PGP International cereal specialties, Protient's milk and whey protein products and yeast extracts from Ohly.

This year sees the centenary celebrations of AB Enzymes which will take place during September/October. For this special occasion we will be launching a unique brochure as well as organising both customer and employee events so everyone can join in the celebrations for reaching this historic milestone.

We are also delighted to announce our success in being accepted for a presentation at the IFT annual meeting and scientific programme subcommittee (SPS) at this year's event. The presentation will take place on Tuesday 31 July at 14.00 and will be given by Dr Nancy Senyah on the subject of the potential of lupin proteins as functional health food components.

For further information, contact:
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ABF Ingredients
Sugar Way
Peterborough
PE2 9AY
United Kingdom
Phone: +44 (0) 1733 555032
Fax: +44 (0) 1733 427846
e-mail: info@abfingredients.com
Web: www.abfingredients.com

Advanced Food Systems, Inc.

Looking for reducing fat content and product cost? Try our specially designed dehydrated dairy system, called **Milk Plus™**. When **hydrated in whole milk**, it can be used as a 1:1 replacement for heavy cream in sauces, soups, and bakery products. The finished product is similar in flavor, mouth-feel, and color to heavy cream but is significantly lower in cost and fat. **Milk Plus™** is a dry system that requires no refrigeration.

Milk Plus™ is one of many products carefully designed and manufactured by our R&D, Technical Service, and Production teams, whose experience and expertise provide our customers with creative culinary experiences as well as the latest advances in Food Science and Technology. We help our customers with improved Texture and Flavor, Lowered Costs, Improved Process Control, and Development of New Products in our state-of-the-art manufacturing facility and R&D laboratory and kitchen.

This year we are celebrating our **25th Year** of providing our customers with innovative problem-solving, high-quality products, fast turnaround, and outstanding technical service. We have grown from our humble beginnings in 1982 to a highly-reputable and reliable company which provides hundreds of custom-designed products across almost all food categories.

Whether your needs are for product or cost improvements, new product development, or value-added functional ingredient systems, we are ready to turn your project into a success. Advanced Food Systems, Inc.: **Providing the Right Balance of Texture and Flavor.**

For further information, contact:
Advanced Food Systems, Inc.
21 Roosevelt Ave.
Somerset, NJ 08873
(800) 787-3067
Fax: (732) 873-4177
Email: info@afsnj.com
www.afsnj.com

Ajinomoto Food Ingredients



In the food business for nearly a century, the Ajinomoto Company Inc. has provided both tasty and healthful products to Consumers around the Globe. Literally translated, Ajinomoto means "the essence of taste."

Ajinomoto established its name with its signature product, monosodium glutamate, and later ventured into amino acids, artificial sweeteners, savory ingredients and specialty ingredients. Ajinomoto has embraced a management philosophy focused in making significant advances in food and health on a global basis. That is, products that not only taste good; they are good for you.

As its name implies, Ajinomoto provides the "essence of taste," and it has done so without compromise for nearly 100 years.

Link to www.ajiusafood.com for more information.

AJINOMOTO

For further information, contact:
Brendan Naulty
VP Sales & Marketing
8430 West Bryn Mawr Avenue
Suite 635
Chicago, IL 60631
Phone: 773-308-7852
Fax: 773-714-1431

ALFRED L. WOLFF

Fighting obesity starts with low-calorie, high-fibre food. Alfred L. Wolff's water soluble acacia dietary fiber **Quick Fibre™** fortifies beverages, dairies, snacks, pastries and cereal bars that provide the body with essential elements for a balanced nutrition. The prebiotic function of **Quick Fibre™** turns foodstuffs into functional products to improve intestinal health through a good digestion. We invite you to come and try ***"Fresh 'n Healthy"***, our summer drink with a nice functional kick to quench your thirst during the show.



Also featured at IFT 2007, the functional efficiency of **Quick Gum™**, Alfred L. Wolff's brand of **Acacia Gum** (Gum Arabic), a quickly soluble additive for food, beverages, candies, flavour emulsions and spray-dried flavours. All types of **Quick Gum™** are easy to use as free-flowing and purified powders or as stabilized aqueous solutions, fitting in the most diversified applications. Further Hydrocolloids, Licorice Extract, Honey, Organic Sweeteners and our line of "Confectionery Performers" complete Alfred L. Wolff's natural raw materials and brand ingredients. Certified ISO 9001, Kosher and Halal.

ALFRED L. WOLFF

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Contact name: Thomas Marten
Phone: 312-265-9889
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www.alwolff.com
IFT Booth 4413

2007 Supplier Profiles

American Egg Board



American Egg Board (AEB) is the U.S. egg producers' communications link to food processors. As the egg industry's promotional organization, AEB works to educate manufacturers and developers of new food products about the functionality and nutritional benefits of eggs. The egg is still one of nature's most perfect foods and can help make other foods perfect, too. In fact, eggs perform multiple functions in the making and processing of foods, while simplifying the ingredient statement. AEB develops and distributes resource materials to assist product developers, shares timely tips and trend information through a quarterly newsletter and a monthly e-newsletter, and also makes available egg product experts to answer technical questions.

For more information about American Egg Board promotional efforts and activities, or facts on egg products, nutrition, technical specifications and formulas, visit us at our web site: www.aeb.org.



For further information, contact:
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Director Egg Product Marketing
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Park Ridge, IL 60068-1340
847.296.7043
Email: aeb@aeb.org
www.aeb.org

AMERICAN PALM OIL COUNCIL

Invites you to our **5th Global Oils and Fats Business Forum**. The previous Forum has afforded the participants to look into the forces shaping the 21st century and to tackle the challenges that face the industry. With this perspective, it is but proper that this year's forum will focus on how the members of the industry can interface in order to improve applications, enhance usage and find solutions to the needs of both the manufacturers and consumers.



"Oils & Fats Synergy in Food and Fuel Applications"
September 13 & 14, 2007
Venetian Hotel, Las Vegas

In connection of this theme, we have brought together manufacturers and consumers alike to give their updates in their respective businesses. With the coming together of these key players, we are building the network for a healthy exchange of ideas, updates, solutions and practices..

The Forum will cover the following topics:

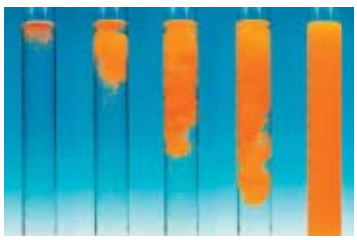
- New Scientific and Nutrition Advances
- Latest Technological Developments and Trans Fat Free Formulations
- Biodiesel Updates
- Media Panel Discussion on Latest Trends, Developments and Issues in Oils & Fats within the Food Industry

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F: 310 944 3544
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www.americanpalmoil.com

BASF Corporation

BASF Corporation
Helping Make Products More Nutritious™

Key Personnel
- Niall McStay, Director, Human Nutrition
- Santiago Vega, Industry Manager, Human Nutrition
- David Suriani, Sales Manager Manager, Human Nutrition



Company Description
BASF helps food, beverage and dietary supplement manufacturers make their products more nutritious with a combination of quality ingredients, advanced technologies and scientific expertise. BASF has launched a portfolio of allergen-free and vegetarian formulations, including beta-carotene and vitamins A, D3, E and K1. On the scientific front, BASF-sponsored research published in the American Journal of Clinical Nutrition demonstrates that a combination of carotenoids (beta-carotene, lycopene and lutein) in dietary supplement form can effectively protect deoxyribonucleic acid (DNA) from oxidative stress damage.

Products
- Vitamins A, B, C, D, E and K
- Carotenoids such as Lucarotin® Beta-carotene, LycoVit® Lycopene, Lutein
- Allergen-free and vegetarian formulations (beta-carotene and Vitamins A, D3, E and K1) that are protein-free, gluten-free and GMO-free
- Polyunsaturated Fatty Acids such as Dry n-3™ Omega-3-fatty-acids
- Caffeine
- Divergan PVPP Products

Special Services
BASF's Technical Service Center in Ledgewood, N.J. houses laboratory testing and processing equipment used for foods, beverages and dietary supplements. State-of-the-art equipment for beverage processing and high-speed tablet pressing is available to demonstrate the use of BASF products in customer applications. We provide local and global resources for technical support and expertise to provide solutions to our customers' needs.

For further information, contact:
BASF Corporation
Florham Park, NJ 07932
Tel: (800) 527-9881; Fax: 973-245-6843
E-mail: nutrition@basf.com
Web: www.human-nutrition.basf.com

BASF
The Chemical Company

Bioenergy Life Science, Inc.

Absolute Energy
Bioenergy Life Science is the world leader in D-ribose. The Company offers branded, value-added bioactive ingredients for functional foods, beverages, nutraceuticals and cosmoceuticals. Bioenergy RIBOSE™ addresses needs affecting millions worldwide, including congestive heart failure, ischemic heart disease, neuromuscular disease, fatigue, anti-aging, sports nutrition, and energy health.

Years of research conducted at leading academic centers in the U.S. and Europe have demonstrated that D-ribose provides metabolic support to the body during and following hypoxic stress or in cases of metabolic dysfunction. D-Ribose amplifies the body's natural response to metabolic stress and acts to increase the hypoxic threshold of tissue, protecting it from oxygen deprivation and stimulating recovery following hypoxia or in cases of dysfunctional energy metabolism. D-Ribose is all natural, safe, and clinically proven.

Technology, Patents, New Products:
- 29 issued or pending patents covering broad applications for D-ribose in medicine, nutrition, and veterinary care.
- Does not raise blood sugar level.
- Safe, effective and all natural.

Major Applications:
- Functional foods, beverages, sports nutrition, anti-aging products, supplements, dairy beverages, nutrition/health/meal replacement bars, clinical nutrition, and more.

Major Products:
- Bioenergy RIBOSE™ branded D-ribose ingredient for functional food and beverage.
- Riboxyl™ branded D-ribose ingredient for cosmetics.

BIOENERGY RIBOSE™

Bioenergy Life Science, Inc.
A Bioenergy Company

For further information, contact:
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13840 Johnson Street NE
Ham Lake, MN 55304
Phone: 763-757-0032
Toll Free: 1-866-RIBOSE
Fax: 763-757-0588
www.bioenergy.com

2007 Supplier Profiles

Blendex Custom Blending



The company's primary business is to blend dry ingredients for the food industry. One of the fastest growing custom blenders, Blendex has a product line of more than 200 food products produced using only the highest quality of raw materials.

Blendex is firmly committed to TQM and has been rated Superior by AIB for more than a decade. The company's operation is HACCP accredited, is the recipient of many awards including Vendor of the Year, BBB marketplace ethics, fastest growing, and several awards for Manufacturing Excellence.

All products are packaged to customers' specifications, with or without private labeling, shipped when and where they are needed – custom formulation, packaging, storage, and shipping. Blendex features blending procedures for allergenic and nutraceutical products in a climate controlled, dust controlled atmosphere. Blending at its best!

Blendex® Company
Blending at its best!

For further information, contact:
Blendex Custom Blending
11208 Electron Drive
Louisville, KY 40299
www.blendex.com
1.800.BLENDEX Toll
1.800.267.1024 Fax
Contact: Ron Carr

Blue Diamond Almonds

Products: Almonds
Description: Blue Diamond brand almonds. The most complete line of almond products. Offering many styles of cuts or slices to suit your particular needs. Roasted or dry roasted, butter or paste, blanched or natural. Almonds, nutritional powerhouses with remarkable shelf life and versatility. Rely on Blue Diamond for quality of product, development assistance, and follow-through service when your new product succeeds. The future is bright for California almonds, and today is the time to begin product development that will take advantage of the bountiful supplies on the horizon. Blue Diamond, building markets since 1910.



BLUE DIAMOND®

For further information, contact:
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Account Manager
Blue Diamond Growers
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ph: 916-442-0771
fax: 916-446-8622
email: jwagaman@bdgrowers.com
internet: www.bluediamond.com

Brenntag North America

BRENNTAG is the global leader in the distribution of a full menu of food processing ingredients, as well as MRO and industrial chemicals. Let us cater to your needs with products that range from fundamentals to specialties, including acidulants, emulsifiers, enzymes, hydrocolloids, preservatives, sweeteners and more. All served just the way you ordered it!



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BUNGE OILS



Bunge Oils transforms commodity oils into value-added ingredients that reach consumers everywhere, every day. At Bunge, we excel at providing customized formulations and technical know-how, oftentimes developing healthier products and novel solutions long before our customers request our assistance with such challenges. As part of the world's largest oilseed processor, Bunge Oils offers a worldwide perspective while maintaining sufficient flexibility to respond quickly to local concerns.

Bunge will be featuring its full spectrum of trans solutions, which includes its RighT Technology that results in a greater than 80% trans reduction, its Identity-Preserved Low-Linolenic Soybean and High-Oleic Canola Oils, Palm and Palm Kernel fractions, and Custom-Blended and Interesterified Oils, designed to deliver specific nutritional profiles or product functionality.

At Bunge our vision of the future is based not only on selectively growing our own business, but on helping our customers to successfully grow their business as well. Helping our customers achieve their goals influences everything we do.

BUNGE®

For further information, contact:
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St. Louis Missouri
Phone: 800-828-0800
Fax : 815-523-8081
Email : rhonda.olechowski@bunge.com
Contact : Rhonda Olechowski
www.bungenorthamerica.com

2007 Supplier Profiles

Butter Buds Food Ingredients



Butter Buds Food Ingredients will be demonstrating its line of natural dairy concentrates: Butter Buds®, Cheese Buds®, Cream Buds™, and Buttermilk Buds®. These ingredients provide the rich flavors of butter, cheese, cream, and buttermilk. They are also used to mask off-flavors (such as soy), round out harsh notes, and enhance savory and sweet flavors – while saving cost and adding insignificant fat.

The Butter Buds line has proven effective for improving taste in almost any kind of food product, including meats, bakery, snacks, soups, sauces and dressings.

The company also makes CocoaButter Buds™, a unique, natural solution for enriching chocolate flavor without adding additional fat, and Dried Beer Extract™ a non-alcoholic, natural beer concentrate in powdered form, perfect for imparting beer flavor to batters, meats, baked good and snack seasonings.

Visit Butter Buds Food Ingredients at booth #1361

ButterBuds℠
FOOD INGREDIENTS

For further information, contact:
Butter Buds Food Ingredients
2330 Chicory Road
Racine, Wisconsin 53403
262.598.9900
bbfi@bbuds.com
www.bbuds.com

California Raisin Marketing Board

CALIFORNIA RAISINS –The surest path to success begins not with the product, but with what's in it.



California Raisins are always the wise choice. On their own or in some of the industry's favorite food products, California Raisins deliver unique flavor, dietary fiber, essential nutrients and important antioxidants — all self-contained in a deliciously, sun-sweetened fruit ingredient.

Whether used to enhance flavors, eliminate or reduce fat content, or simply to extend shelf-life, California Raisins are the ingredient that is always the wise choice. Why? Because not only do California Raisins transform the character of certain foods, they also maintain structural integrity during processing. California Raisins have a great emulsifying quality when added to vinaigrettes, not to mention, acting as an excellent base ingredient to naturally help bind dry ingredients together.



Like in his Sea Scallops with Salsas Pasitas Verdes (Green Salsa with Raisins) featured here, Chef Robert Del Grande deploys California Raisins in novel combinations with salty, crunchy, spicy and smoky ingredients to achieve a spectrum of subtle and balanced flavors.

Regardless of how they are used, raisins provide healthy, sun-sweetened flavor from California's San Joaquin Valley and are always a wise choice in product research and development.

Flavor Meets Functionality: the Way of the California Raisin



For further information, contact:
California Raisin Marketing Board
Karla Stockli
Vice President of Marketing
3445 North First Street, Suite 101
Fresno, CA 93726
559-248-0287 - phone
559-224-7016 - fax
www.LoveYourRaisins.com

Cargill



Cargill will showcase its expanding application development capabilities and functional ingredient portfolio at IFT 2007.

Responding to consumer and customer demand for health-oriented, great-tasting and convenient food and beverage products, Cargill will feature more than a dozen prototypes from the bakery, beverage, cereals and snacks, confections and dairy categories at IFT 2007 (booth #2348).

From addressing consumer health issues, such as weight management and heart health, to satisfying consumer cravings for pure indulgence, Cargill will demonstrate how it helps customers meet their business goals through its ability to help customers formulate new products through a combination of market insights, technical capabilities and ingredient innovations in flavor, sweetness, texture and health-promoting ingredients.

Cargill prototypes featured at IFT 2007 will include:

- Baked goods with flavor variety and healthier fats
- Beverages that address bone health and energy
- Adult-focused indulgent cereal and convenient snacks with health benefits
- A healthful dairy drink and indulgent dairy treat
- Confections with no or reduced sugar and low calories
- Organics, including a decadent organic confection and refreshing organic low-calorie beverage

Cargill™

For further information, contact:
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Cargill
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Wayzata, MN 55391
Ph: 952-742-0123
www.cargill.com

Cargill, Incorporated

Booth #2348

Cargill to showcase expanding application development capabilities and functional ingredient portfolio at IFT 2007



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collaborate > create > succeed

Cargill™

For further information, contact:
Cargill Incorporated
PO Box 9300
Minneapolis, MN 55440-9300
1-800-CARGILL (227-4455)
www.cargill.com

2007 Supplier Profiles

Century Foods

Century Foods is a single source food and beverage engineering and manufacturing partner for both branded and private label products. Whether you want to manufacture or improve an existing product, or develop a new product—we offer the resources and experience that will facilitate your success.

Research and Development—Expert research and development teams with backgrounds in chemistry, microbiology, nutrition, food science and chemical engineering help you develop the best-tasting, most functional products.

Agglomeration and Blending—Comprehensive abilities such as large scale blending, particle sizing, instantinzing, agglomerating, and fluid bed drying of nearly any type of food ingredient.

Quality Assurance—Quality assurance/control lab to ensure all ingredients and the final products are safe and meet all specifications. Continuous quality control processes guaranty your product meets the highest food quality standards.

Filling and Packaging—Capacity and flexibility to meet your specifications, accommodating packaging of nearly any size or type and packaging details such as pressure-sensitive adhesive, shrink labels, tamper evident seals, neckbands and induction seals.

From development, manufacturing and testing to packaging, we have the experience to provide a turnkey solution for your retail product launch.



CENTURY FOODS INTERNATIONAL
A Division of Hormel Foods Corporation

For further information, contact:
Century Foods International
400 Century Court, PO Box 257
Sparta, WI 54656
1-800-269-1901
www.centuryfoods.com
info@centuryfoods.com

Citroil Enterprises

Citroil is a 40 year old flavor and essential oil company with a tradition of quality, excellence and unsurpassed customer service. ***Our mission is to help you develop a successful, quality product by using our expertise to fulfill your marketing goals.*** We have made a substantial investment in personnel and have built a state-of the-art lab at our spacious New Jersey headquarters to assure our clients that we can give them the best the industry has to offer.



Flavor Expertise

At Citroil, we pride ourselves in having some of the most talented professionals in the industry. Under the leadership of **Director of Research & Development, Elaine Kellman Grosinger,** a renown chemist with 25 years of experience in the food industry, our staff can customize any flavor to your exact specifications or produce a specialty flavor for a specific marketplace or demographic. Our staff of flavorists and food technologists, have developed some of the most recognized flavors and foods and beverages in the industry, and will work closely with you to help you achieve marketing and sensory success. Working with us will not only be a rewarding experience, but a profitable one as well.

Citroil enterprises

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www.citroil.com

CNI – COLLOIDES NATURELS INTERNATIONAL

CNI, Colloides Naturels International is the world's leading manufacturer and marketer of Acacia gum and other specialty hydrocolloids. The combination of extensive manufacturing capacity with experienced raw material sourcing from 15 countries, delivers to customers a high degree of global supply assurance and traceability. Today, CNI has a major global presence with operations in over 75 countries.

Acacia gum is an all-natural hydrocolloid used in many food applications. Acacia gum provides technical functionality as an emulsifier, mouthfeel enhancer and film former while also providing an excellent source of soluble dietary fiber. CNI's Acacia gum is FDA GRAS, GMO-free, available with organic certification.

Proprietary hydrocolloid blends also complement the CNI product line by combining the proven functionality of Acacia gum with other hydrocolloids or other fibers.

Main Products:

FIBREGUM™:

- An all natural and highly functional source of soluble dietary fiber, offering a guaranteed minimum of 90% fiber (dry weight basis, AOAC method).
- Bifidogenic properties proven through in-vitro and in-vivo clinical studies, and a high degree of tolerance in human diets.
- Provides multiple sources of value by combining nutritional fiber fortification with strong technical functionality.

EQUACIA™:

- A unique and nutritional texturizer
- The new ideal fat replacer
- A well-balanced association of Acacia fibers (soluble fiber) and wheat fibers (insoluble fiber)
- Made of all consumer friendly fibers and benefits of a clean labeling

Major Markets:

- Nutritional Bars, Drinks, Snacks
- Bakery
- Fiber Fortification
- Nutrient Granulation & Encapsulation
- Beverages & Flavor Emulsions

Major Products:

- Acacia gum • Hydrocolloid Blends • Fiber blends

For further information, contact:
Key Personnel:
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Sebastien Baray – Technical Manager
Sydney Heese – North American Sales
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Email: samples@cnius.com • Web: www.cniworld.com

Cognis® Nutrition & Health

Newtrition gives your products a healthy competitive edge.

Newtrition from Cognis® Nutrition & Health is your opportunity to meet the increasing demands for innovative, effective and safe functional foods. Cognis offers naturally-sourced ingredients that can help you create cutting-edge products, and position your business for long-term growth.

In addition, Cognis provides customer-focused teams with experts in technical service, science, sales support, and marketing to ensure the success of your products in applications ranging from supplements to beverages, dairy products, baked goods, and much more. Some of our science-backed ingredients include:

- Omevital™ omega-3 fish oils. The building-block for enhanced health and vitality.
- Vegapure® plant sterols. The natural ingredient for heart health.
- TONALIN® CLA (conjugated linoleic acid). The fat fighter for leaner, healthier bodies.
- Xangold® natural lutein esters. The Gold Standard™ for natural eye health.
- Betatene® natural mixed carotenoids. The antioxidant for wellness and immunity.
- Covitol® natural source vitamin E. The protection for healthy body defense.

With 40+ years of excellence in the food industry, Cognis is a leading global supplier you can trust to deliver the innovation and naturally-sourced solutions you need to succeed.

Give your products a healthy competitive edge with **New**trition. Only from Cognis.

cognis
we know how
Newtrition

For further information, contact:
Cognis® Nutrition & Health
5325 S. Ninth Ave.
La Grange, IL 60525
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Phone: 800 673-3702
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Email: cognis.custserv@cognis.com
www.cognis.com

2007 Supplier Profiles

Commercial Creamery Company





Commercial Creamery Company, founded in 1908, has been focusing on specialty dairy ingredients for nearly 100 years. Our CIA chef, along with our food scientists, can custom develop a product just for you. We currently produce many items for the food service industry, including seasonings, sauce mixes, and soup mixes. Our new state-of-the-art blending facility can blend your product instantly and without shear to create a superior product for your customers. We can package in packets from one ounce to 16, or in bags ranging from a few pounds to 50. Please contact us to discuss your desires.

Commercial Creamery™ COMPANY

For further information, contact:
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159 South Cedar Street
Spokane, WA 99201
(800) 541-0850
Fax (509) 838-2271
info@cheesepowder.com
www.cheesepowder.com

CORN PRODUCTS

Since 1906, Corn Products International, Inc. has been a leading supplier of high-quality food ingredients. More than 100 years later, we continue to lead the ingredient industry with solutions for a wide range of food and beverage applications: baked goods, beverages, confectionery, dairy and processed foods.

Through the years we have expanded our offerings to include a variety of specialty ingredients including sweeteners, starches and functional ingredient solutions. With 35 facilities in 15 countries worldwide, Corn Products International has a global set of resources to provide customers with innovative formulation solutions.

Stop by IFT Booth #3348 to see Corn Products' newest ingredients that include: *SweetDex™ alternative sweetener*, a low-calorie sweetener that comes ready to package with excellent flowability and low dusting; *Globe® Plus Ultra-Lite Maltodextrin*, ideal for use as a spoon-for-spoon tabletop sweetener; and *Expandex® modified tapioca starch*, a gluten-free ingredient that enhances the texture and appearance of bakery applications.

Visitors will have the opportunity to sample these ingredients, and enter to win a pair of roundtrip airline tickets anywhere in the world.

For further information, contact us at info@cornproducts.com or 708-551-2684.

CornProducts INTERNATIONAL

2007 Supplier Profiles

The Cranberry Institute

Find out about the latest advances in cranberry health research that have earned this uniquely tasty berry its powerhouse reputation at:

An Overview of the Research Base Supporting the Health Benefits of Cranberries, including Clinical and Mechanistic Findings

IFT Scientific Program, Session Number 079
2007 IFT Annual Meeting and Food Expo
Monday, July 30 at 10:30 a.m. – 12:00 p.m.

- Learn about both the known and emerging health benefits of the cranberry
- See the spectrum of basic and applied research supporting these benefits
- Understand the implications for new and existing functional foods and supplements for your company



CRANBERRY INSTITUTE

For further information, contact:
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East Wareham, MA 02538
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jdd@capecod.net
www.cranberryinstitute.org

David Michael & Co.

Hit Your Flavor Target Faster® with David Michael! We always have something new and creative cooking at David Michael & Co., and our flavor chemists and food scientists have spent months developing unique flavor sensations that you won't want to miss!

Stop by Booth # 1353 in Chicago to sample a range of delightful flavors for the palate. First, satisfy your curiosity by sampling David Michael vanillas shown in a variety of savory applications. Then, indulge in delicious dairy-based drinkable desserts.

At the booth, visitors can also enter for a chance to win a free trip to David Michael's annual Innovation Roadshow® on October 4th in Philadelphia.

Family owned and operated, David Michael & Co. has been a leader and an innovator in the food flavor industry for more than 110 years. In addition to their Philadelphia headquarters location, David Michael has sales and manufacturing facilities in Northbrook IL, San Bernardino, CA, and Mexico, France and China. David Michael offers a comprehensive line of over 30,000 flavors, stabilizers and natural colors, which can be custom-designed to meet the needs of virtually any food product.

DAVID MICHAEL & CO.
Hit Your Flavor Target Faster®

For further information, contact:
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Total Customer Satisfaction Department
10801 Decatur Road
Philadelphia, PA 19154
1-800-DM-FLAVORS
215-637-3920 fax
www.dmflavors.com

2007 Supplier Profiles

Edlong Dairy Flavors



Today's emphasis on "good for you" foods is going full speed and gone are the days when healthy food was expected to have less taste. Food manufacturers are now more challenged than ever as consumers expect them maintain the highest level of flavor and texture when a product is fortified with any number of vitamins, minerals and other nutrients.

Edlong Dairy Flavors, with over 90 years of experience in developing a full line of distinctive functional profiles, can enhance the flavor of your product, mask the off-notes, add mouthfeel to low or no-fat foods and many times extend your shelf-life while affording significant cost savings.

Edlong's flavors will overcome the bitter tastes of the active ingredients in many functional foods and replace that bitterness with a variety of notes and highlights that are pleasing to the palate.

Natural, Non-Dairy, Kosher Certified, Non-GMO, Organic Suitable and many other requirements can be met with Edlong's flavors. Soy-based foods and beverages, antioxidant enhanced, vegan foods, nutraceuticals… all can benefit by contacting the skilled team of flavorists and technical solution scientists who are ready to make your next healthy project a success.

Edlong, the concentrated dairy flavor experts, have six focused categories of flavors: cheese, butter, milk & cream, cultured, sweet dairy and functional.

EDLONG
Where Service is a Lifestyle
LEGENDAIRY FLAVORS SINCE 1914

For further information, contact:
Technical Solutions Helpdesk
Edlong Dairy Flavors
225 Scott Street
Elk Grove Village, IL 60007, U.S.A.
847-631-6700
info@edlong.com
www.edlong.com

ESHA Research



Deadlines plague all industries, and time constraints are frustrating, regardless of the line of work. But, for food product formulators, this can be doubly true. Often, formulators must rely on outside laboratories for nutrient content analysis, and the time factor falls under someone else's control. Considering that lab analysis may take up to two weeks, it's no wonder food processors regularly seek alternatives.

ESHA Research offers Genesis R&D SQL Product Development and Labeling software, as a solution.

For more than a decade, Genesis R&D software has provided a reliable alternative to costly lab analysis and outsourcing of label creation. Genesis, trusted throughout the world, is used by 90 percent of the top food manufacturers in the United States

At the core of this program is an extensive database tailored specifically to the food manufacturing industry. Included in the database are raw foods, processing items (gums, bases, preps, colors, etc.) an d recipes. For each item in the database, information on up to 126 nutrients and nutrient factors is provided.

With a few clicks, users can automatically generate a camera-ready Label complete with an ingredient statement, allergen information and nutrient content claims. And this year, weíve added a bar code feature.

esha RESEARCH
nutrition software & databases

For further information, contact:
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Salem, OR 97309
sales@esha.com
www.esha.com
800-659-3742
503-585-6242
Fax: 503-585-5543
IFT Booth #770

Gold Coast Ingredients, Inc.

Gold Coast Ingredients continues to satisfy the Flavor needs of all aspects of the Food Industry; Bakery, Beverage, Confectionary, Dairy, Entrees, Health & Beauty, Nutraceutical, Pharmaceutical, and Snack Foods. From creating new Custom Formulated Flavor ideas and Color Blends for Research and Development departments to providing low minimums and short-lead times for Purchasing departments. Certified Organic, Non-GMO and Natural Flavors are available in Liquid, Powdered or Spray-Dried forms.

Experiencing world-wide growth, Gold Coast Ingredients has expanded their presence in South East Asia providing service and products from their plant in Shenzhen China.

Gold Coast Ingredients will be introducing a variety of the latest ethnic flavors that have been developed by their extensive Research and Development Laboratory. Just a few include Azuki Bean, Yuzu, Soursop, Goji Berry, Mangosteen, Dragonfruit, Acai, Wasabi, Fig and Condensed Milk. Packets of refreshing mints made from unique flavor blends of Green Apple Mint, Lemongrass Mint, Coffee and Creamy Vanilla Mint will be available at the Gold Coast Ingredients Booth #2532 at Chicago IFT Food Expo 2007. Gold Coast Ingredients will also be featuring Wasabi flavored potato crackers.

GOLD COAST™
ingredients, inc.
Flavor Fusion®

For further information, contact:
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800-352-8673
Fax: 323-724-9354
Michele Trent
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www.goldcoastinc.com
IFT Booth #2532

Grain Millers, Inc.

Grain Millers, Inc., North America's largest industrial specialty grain miller, has a full line of conventional and organic whole grain products, such as, oats, wheat, barley, rye, triticale, corn, soybeans, flax, oat fiber, stabilized whole wheat flour and hydrocolloids. Each of these products can be custom milled to meet your needs within the fast moving functional food market.

Processors will be able to incorporate our entire line of products in an array of different products, such as, breads, ready-to-eat cereals, snack foods, nutritional bars, drinks, tortillas, pizza dough, pita breads, spice blends, gravy mixes, taco & ice cream shells and meat products. Our oat fiber and hydrocolloids also provide the ability to improve yields by limiting attrition and increasing the use of water and/or fat within your systems. In addition, our fibers are produced naturally without the use of chemicals, which provides phytochemical benefits other fibers are not able to claim.

Grain Millers is the first company to provide the industrial processor with a clean label oat fiber and other natural ingredients. From our full line of conventional and organic grains and fiber products to our state-of-the-art mixing and blending facilities, your company will be guaranteed the cutting edge in "Whole Grain" technology and services. Please call us for more information or to ask how we can assist in your product development.



GRAIN MILLERS
INCORPORATED

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2007 Supplier Profiles

Grain Processing Corporation

Innovative, Responsive, Creative – Naturally

GPC's line of specialty carbohydrates continues to expand to meet the changing requirements of our customers. Innovative specialty ingredients, designed with customer-specific needs in mind, highlight our product line.

Grain Processing Corporation (GPC) is the largest, most dependable producer of MALTRIN® maltodextrins and corn syrup solids. MALTRIN®products are the gold standard for the industry.

PURE food starches by GPC are used for thickening, gelling, and coating agents in a myriad of applications. Our product development team provides customers with a starch designed especially for their specific need.

TruBran™ corn bran is a golden brown fiber made from 100% yellow corn. It contains a minimum of 75% total dietary fiber, almost all of which is insoluble, and is specially processed for added stability.

Sales: The GPC sales force is technically trained and has the latest information on our products and how they will fit customer needs.



Technical Service: Specialists in their respective fields, the GPC technical service group helps with troubleshooting, sampling, and finding the perfect solution quickly.

Grain Processing Corporation continues to achieve its goals and break down barriers as an innovator in specialty carbohydrate ingredients. New products are constantly being researched and developed. GPC is the preferred source for carbohydrate ingredients worldwide… naturally.

For further information, contact:
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1600 Oregon Street
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E-mail: sales@grainprocessing.com
Web Site: www.grainprocessing.com
IFT Booth #164

Where Innovation Comes Naturally

GTC Nutrition

GTC Nutrition, a business unit of Corn Products International, Inc. is a recognized leader in providing customized nutrition solutions to the food, beverage and supplement industries. Our portfolio of innovative ingredient solutions along with our in-house scientific, marketing and technical expertise brings healthy ideas and products to life – all to improve the wellbeing of today's consumers across the globe.

Core Competencies:
Ingredient Solutions
Scientific Expertise
Marketing Ingenuity
Applications Innovation
QA and Regulatory Support
Personal Customer Service



GTC NUTRITION

For further information, contact:
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E-mail: generalinfo@gtcnutrition.com
www.gtcnutrition.com

2007 Supplier Profiles

Hilmar Ingredients



Hilmar Ingredients delivers the promise of dairy – whey protein, the nutritional and functional powerhouse. As part of Hilmar Cheese Company, the world's largest single site cheese and whey products manufacturer, we have the critical advantage of a premium sweet whey supply. Steady, high quality, and carefully controlled via a select dairy producer network, our whey source is the freshest and most consistent possible.

From this foundation, we produce the Hilmar™ 8000 series of whey proteins – from 80% WPC to hydrolysates and +90% isolates, including instantized versions. Our WPI is uniquely functional due to its special manufacturing via cross flow-filtration and a patented fractionation process. We also offer an alpha-lac enriched whey protein for applications requiring specialized nutrition.

In addition, we produce the Hilmar™ 5000 series of high purity edible and refined lactose, and pharmaceutical lactose specifically formulated for the wet granulation process.

Hilmar Ingredients also provides technical, processing and formulation assistance. We have a fully equipped pilot kitchen and research lab staffed by experienced protein and application scientists – all designed to help you discover the advantage of dairy in your food or beverage.

Key Applications

- Low GI foods
- Acid beverages
- Snack bars
- Powdered mixes
- Fortified waters, fruit juice
- Egg replacement
- Dips, dressings
- Healthy baked goods
- Frozen meals

HILMAR INGREDIENTS™

We deliver the promise of dairy.™

For further information, contact:
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9001 North Lander Drive
Hilmar, CA 95324
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Toll free: 888-300-4465
Fax: 209-656-1184
Email: info@hilmaringredients.com
www.hilmaringredients.com

Hormel Specialty Products



Visit the Hormel Specialty Products booth #935 to learn about our new Omega-3 fish oils! Using proprietary technology, Hormel eliminates all traces of fishy taste, odor and impurities. Omega-3's can be added to a variety of applications in an effort to help consumers reduce their risk of cardiovascular disease, decrease age-related macular degeneration, and reduce hypertension. Hormel's Omega-3's also have high oxidative stability, leading to the best shelf stability available.

In addition to our Omega-3 fish oils, we will be showcasing our brand new line of all-natural, USDA-approved soup stocks, as well as our line of cheese ingredients. Processed mozzarella, cheddar, provolone, Parmesan, blue cheese and Romano are among the many different cheese blends, substitutes and imitations offered. Blends are customized to create high melt, low melt, and fat free cheeses. Also offered are calcium and sodium caseinates, milk protein concentrates, isolated milk proteins, whey protein concentrates and isolates, buttermilks, whole milk powders and solids, cultured nonfat milk, and demineralized whey. With multiple shipping locations throughout the United States, complete R&D support and competitive prices, Hormel Specialty Products is also relied upon by companies large and small for their ingredient needs.

For further information, contact:
Hormel Specialty Products
Phone: 800-956-0399
Fax: 507-437-5120
mrbuttshaw@hormel.com
Mike Buttshaw
1 Hormel Place
Austin, MN 55912
www.hormelingredients.com

Hormel Foods
Specialty Products

2007 Supplier Profiles

ICL Performance Products LP



Sodium is believed to be a contributor to cardiovascular diseases, including high blood pressure and stroke. As consumers become more health conscious, the demand for healthy food products continues to grow. Food and beverage manufacturers now need to develop "better-for-you" options to meet this health food demand and **ICL Performance Products LP** can help. ICL is the leader in creative phosphate solutions and delivers a complete line of phosphate ingredients for the food and beverage industry.

ICL is showcasing two of its phosphate technologies at IFT this year. **Benephos™** is a reduced-sodium version of a soluble polyphosphate that allows formulators to market shelf-stable beverages. It also works well in dairy applications, such as processed cheese, dairy sauces and dairy-based foams. Benephos enhances flavor and improves the stabilization of color, protein and minerals in products while reducing sodium content and adding potassium. It is ideal for healthy beverages containing fruit, soy or dairy proteins. **Levona™** is a unique leavening agent that is calcium rich and has zero sodium. The product delivers controlled release, uniform cell structure and a neutral flavor profile. Levona also provides excellent texture, volume and moisture, so it can be considered in a variety of bakery applications. It is ideal for "better-for-you" baked goods, including those that contain whole grains and fiber.

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ift2007@icl-pplp.com
www.icl-perfproducts.com

ICL Performance Products LP

Imperial Brands Gourmet & Specialty Division

New Culinary Wine Reductions of Perfection by Imperial Brands



Imperial Brands has launched a line of Culinary Wine Reductions for food processors. Imperial Brands also highlighted a line of denatured spirits which are both authentic and tax free. Diversified varieties of alcohol free 10 – fold Reductions include Red Port, Sherry, Burgundy, Chablis, and Sweet Marsala. The company has winery, vinegar, distillery and bottling operation in locations including Florida and Kentucky.

Finally, a winery has replicated the culinary technique of wine reductions for use in food processing and foodservice industries. Imperial Brands, processor of specialty vinegar, is a major supplier of beverage and cooking wine, as well as denatured spirits, to the food industry.

Imperial Brands chefs have replicated the technique of reducing wines by traditional methods in a large batch process. The company claims a proprietary process capturing desired characteristics of reduced wines. This is a tedious method controlled to insure consistency. There is a great savings in time and labor, while delivering consistent high quality. Restaurant groups can ensure recipe results from chef to chef while presenting a culinary plate.

The Culinary Wine Reductions have applications in soups, sauces, entree, marinades, condiments, specialty food products and flavor production. Foodservice operators in settings where wine reductions are utilized will realize tremendous benefits in development, implementation and purchasing. Imperial Brands products offer savings, consistent quality, and affordability.

IMPERIAL BRANDS
GROUPE BELVÉDÈRE

For further information, contact:
Sales & Service 863.956.2005
sales@ibrandsinc.com
www.ibrandsinc.com

Innophos, Inc.

Innophos, Inc., the leading North American manufacturer of specialty phosphates, offers a complete range of food-grade phosphates for baking, beverage, dairy, meat, seafood, and poultry applications. Innophos uses its knowledge of phosphate technologies to develop innovations that will enhance your products, increasing consumer appeal and convenience. Whatever your application, our on-site technical assistance will help you in the development of unique innovations for your product line. Innovate with phosphate. Innophos, Inc. is headquartered in Cranbury, New Jersey with seven plants in the U.S., Canada, and Mexico.



New Products-

For the beverage industry, Innophos is the premier source for electrolytes, sequestrants, calcium, magnesium and phosphorus which enhance and fortify your formulations.

Now commercially available, VersaCAL® Clear, is a highly soluble calcium source specifically designed for use in clear beverages. VersaCAL® Clear has a clean taste and is an excellent source of calcium and phosphorus, which together are essential for developing good bone health. Innophos also offers a range of phosphates formulated for other beverage applications.

Also available is a new low sodium phosphate blend for processed meat and poultry applications. CURAVIS® So-Lo 93 with 93% less sodium achieves excellent binding qualities with good flavor impact.

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InterHealth Nutraceuticals, Inc.



InterHealth Nutraceuticals is known for its scientific research on innovative, value-added ingredients, along with the knowledge to apply it and the intellectual property to protect it.

InterHealth features **Super CitriMax®** and **ChromeMate®**, the smart choices that help food and beverage manufacturers develop turnkey solutions for products based on the latest scientific findings and trends.

Super CitriMax is a unique, patented form of (—) -hydroxycitric acid (HCA) bound to calcium *and* potassium. It is the only all-natural GRAS-affirmed HCA ingredient clinically proven to help people consume 25% fewer calories, especially from snacking, and, at clinical strength doses, burn 32-107% more fat than diet and exercise alone. Super CitriMax is highly soluble and heat- and shelf- stable. Virtually tasteless, odorless and colorless, it is an excellent choice for weight management and lifestyle products, including beverages, dairy products, cereals and snacks.

ChromeMate® is a patented GRAS-affirmed niacin-bound chromium complex that helps to promote healthy blood sugar levels and normal body weight, especially in individuals who are diabetic or obese. It is clinically proven to significantly reduce fat while promoting lean body mass. ChromeMate has been shown to be absorbed *and* retained at significantly higher levels than any other common chromium complex tested.

Manufacturers often formulate Super CitriMax and ChromeMate together to produce a potent combination for effective weight management and healthy living.

For further information, contact:
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IFT Booth: 1526

2007 Supplier Profiles

International Dehydrated Foods, Inc.

IDF™ is a world leader in the development, processing, and distribution of natural meat and poultry-based food ingredients that include spray-dried meat and poultry powders, chicken fat powders, broth powders, 32% (37 Brix) frozen chicken broth, and shelf-stable liquid chicken fat.



IDF®

Complementing every meal.

For further information, contact:
Customer Service
International Dehydrated Foods, Inc.
P.O. Box 10347
Springfield, MO 65808
Phone: 417-881-7820
Fax: 417-881-7274
E-mail: customerservice@idf.com
Web Site: www.idf.com

ISP Food Ingredients

ISP Food Ingredients is a dynamic company with global capabilities to meet the demands of today's food processors. Through the continual addition of a variety of food ingredients and synergized systems to our core product line, processors have a convenient source for many of their requirements. However, we offer much more than just ingredients.

Today's foods are complex systems of many ingredients that are challenges to formulate into a stable system meeting consumer's texture and taste preferences. ISP's world-class expertise in formulating appealing food and beverage products is the foundation of our reputation as the company to turn to with formulation challenges. Helping our customers solve their problems through research and development and technical service is our primary goal. Whether the challenge is stabilizing a salad dressing or effectively suspending nutrients in a nutritional beverage, ISP Food Ingredients have precisely the right answer.

Our global team of food professionals is at your service to expedite the development of superior food and beverage products.

ISP

INTERNATIONAL SPECIALTY PRODUCTS

For further information, contact:
ISP Food Ingredients
David Ortega
1361 Alps Road, Wayne, NJ 07470
973-872-4368
Fax: 973-628-3886
foodinfo@ispcorp.com
www.ispcorp.com
IFT Booth #2917

Jon Lin Vegetables/ McCain Foods USA

JON LIN VEGETABLES & FRUIT

Jon Lin is a recognized industry leader for high-quality fire-roasted and sautéed vegetables and fruit that deliver the rich taste, crisp texture and bright color of fresh produce in convenient frozen form.

Jon Lin uses direct heat with no water blanching to deliver vegetables and fruit with exceptionally high solid content and balanced moisture. These all-natural procedures result in superior product integrity plus a clean ingredient statement.

- Caramelized and sautéed items are fresh vegetables that are cooked slowly in natural juices or soybean oil.
- Fire-roasted and smokehouse-roasted products are cooked over direct fire in natural juices or extra virgin olive oil to create authentic grill marks and sear in natural flavors.



Now part of McCain Foods–a worldwide leader in premium potatoes, onions and other vegetables–Jon Lin provides customers greater resources including agronomy expertise, culinary support, product innovation, logistics coordination and customer service.

You'll experience high yield, outstanding consistency and unmatched performance when you use Jon Lin vegetables and fruit in signature recipes.

Visit booth #3376 at the IFT Food Expo to sample delicious Jon Lin products – both on their own and in unique culinary applications. For more information, please call 1-800-767-7377.

Jon Lin®

For further information, contact:
Company Name: Jon Lin Vegetables/McCain Foods USA
Contact Name: Jennifer Heike
Address: 2275 Cabot Drive, Lisle, IL 60532
Phone: 630-955-0400
Fax: 630-857-4560
E-Mail: webmaster@mccainusa.com
Web Address: www.mccainusa.com

KALSEC®



Whether a processor needs to manage their color, pungency, heat perception or shelf life or simply balance the flavor in their food or beverage products, Kalsec® has the solution. For more than 50 years, Kalsec® has been a leader in providing innovative ingredients and creative solutions for use in the food, beverage, nutritional and pharmaceutical industries.

Our products, derived from natural herbs, spices, plants and vegetables ensure high quality and consistent extracts for your finished food products. Kalsec® offers a full range of spice and herb extracts, natural colors, and oxidation management products.

Our service is rooted in a dedication to deliver the best products on time, and backed with unparalleled technical expertise. Our science is founded on a commitment to take what nature has provided, and to utilize traditional and innovative ways of thinking to create product solutions for you.

Kalsec®'s onion and garlic extracts reflect this dedication to delivering functional, customized solutions. Kalsec®'s onion and garlic extracts are a money saving alternative to dehydrated onion and garlic powders. An experienced team of product development and sensory specialists is immediately available to develop customized garlic and/or onion extract(s) that are a flavor match to their dehydrated counterparts in multiple food formulations. Kalsec®'s team of experts will assure the switch to garlic and onion extracts will not affect the finished flavor profile.

Kalsec®. Products, Service and Science you can trust… naturally.™

kalsec®

For further information, contact:
Kalsec®
Address: P.O. Box 50511, Kalamazoo, MI 49005-0511
Phone: (269)349-9711 or (800)323-9320
Fax: (269)382-3060
Email: info@kalsec.com
Web: www.kalsec.com
IFT booth #156

2007 Supplier Profiles

Kraft Food Ingredients



As one of the most trusted names in the food industry, Kraft Food Ingredients (KFI) introduces two new products at this year's food expo – Fire Roasted Flavor and Organic Grill Flavor®.

Falling under KFI's Flavors of Cooking™ line, Fire Roasted Flavor is a versatile, well-balanced, natural flavor that delivers a fatty, savory brown, smoked taste to any application including chicken, beef, pork, fish, vegetables, soups, dressings, gravies, pizzas and appetizers. Available in powder form, KFI's new flavor is available in Fire Roasted and Fire Roasted Potato.

Organic Grill Flavor®, an authentic-tasting charbroiled grill flavor, delivers the charbroiled, savory and smoky notes associated with cooking over charcoal without specialized processing in an organic form. Formulated and produced to adhere to the USDA Organic and certified by Quality Certification Services (QVS), Organic Grill Flavor® is natural, does not contain hydrogenated oil and is not made with genetically-modified ingredients. Available in liquid or spray-dried form, Organic Grill Flavor® can be used when formulating organic meats, entrees, sauces, gravies, broths, dressings, soups, snacks and side dishes. The flavor is also kosher certified.

Product specifications and samples are available by calling Todd Hrubes at 901-381-6533 or visiting www.kraftfoodingredients.com.

KRAFT®
KRAFT FOOD INGREDIENTS

For further information, contact:
8000 Horizon Center Boulevard
Memphis, TN 38133
(901) 381-6500
(901) 381-6524
IFT Booth #1548

Lonza Inc.

Products: Kosher Non-GMO food emulsifiers, glycerol and polyglycerol esters, sorbitan esters and polysorbates, along with blends tailored to specific market needs. Lonza also offers nutritional products such as FiberAid®, Niacin/Niacinamide, as well as Carnipure™ crystalline (GRAS) and Carnipure™ tartrate (GRAS; U.S. Patent 5,073,376 and other international patents).



Description: Lonza produces a broad range of emulsifiers and additives for food applications. Lonza has the flexibility to meet emerging customer needs including offering Kosher, non-GMO emulsifiers, unique custom reactions and specialty lipid products.

FiberAid®, a naturally occurring water soluble polysaccharide, is a prebiotic fiber. It is the solution for food manufacturers who not only want to add nutritionally significant amounts of dietary fiber to their functional foods and beverages without jeopardizing taste, color, aroma or mouthfeel, but seek to offer products with digestive health benefits. FiberAid® is produced exclusively by Lonza using a patented water-based, solvent-free manufacturing process. FiberAid® is certified Kosher and GRAS affirmed for foods and dietary supplements without limitations.

Carnipure™ crystalline and Carnipure™ tartrate from Lonza are GRAS for use in certain conventional foods as a dietary source of L-Carnitine. This vitamin-like substance enables the generation of energy from fat.

Lonza is also the leading producer of niacin for food fortification and animal feed, multivitamin supplementation and pharmaceutical applications. Niacin is used to help maintain LDL, HDL and triglycerides and plays a critical role in protein, fat and carbohydrate metabolism.

For further information, contact:
Thomas Brancato
Head of NAFTA Sales & Marketing – Nutrition Portfolio
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Email: tom.brancato@lonza.com
www.lonza.com
www.carnipure.com

Lonza

2007 Supplier Profiles

LycoRed

LycoRed Blasts off with BLT—
A New Beverage Fortification Concept

In booth #765 at IFT 2007, LycoRed will showcase "BLT", a great-tasting new concept for beverage fortification. This antioxidant fortification system exemplifies the company's theme of "creating innovative nutrition". BLT is a dispersible, all natural, ready to use formulation of beta-carotene, lutein, and tomato lycopene.

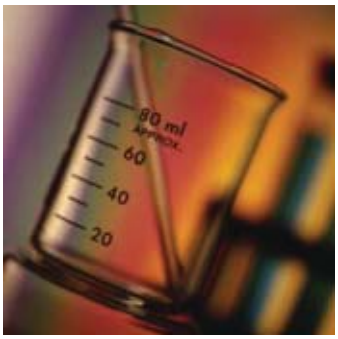


Developed in response to the industry trend favoring antioxidant-rich beverages, it has been added to "Summer Delight", a fruit juice beverage, and "Tomato on the Go", a savory beverage. The BLT formulation contains natural beta-carotene from Lyc-O-Beta, natural lutein from Lyc-O-Lutein and natural tomato lycopene plus other tomato phytonutrients from Lyc-O-Mato® Red. The BLT formulation is highly soluble and designed specifically for nutritional beverages. Tomato on the Go is flavor-enhanced with CTC, a clear tomato concentrate from LycoRed. Both Summer Delight and Tomato on the Go beverages deliver important antioxidant health benefits as well as great taste.

LycoRed works closely with their customers to successfully develop innovative nutritional products. LycoRed's creative fortification solutions simplify the development and production of cutting-edge food, beverage and nutritional supplement products. Partnership and support through all the stages of product development allow the customer to benefit from LycoRed's expertise and creativity. LycoRed's main expertise lies in the production, and formulation of natural carotenoids including lycopene, lutein, beta-carotene, phytoene and phytofluene, as well as natural colorants, premix and microencapsulated ingredients.

For further information, contact:
Visit us at Booth no. 765
LycoRed Corp.
William Redwood
Director of Sales
Phone 201-247-5875
Fax 973-882-0323
Email: info@us.lycored.com
www.lycored.com

McClancy Seasoning Company



For more than 60 years, McClancy Seasoning, a fully integrated flavor and food development company, has been working to develop creative culinary solutions that streamline operations.

From creating innovative seasoning solutions, to working directly with concept formation, McClancy's research and development professionals design flavors and items that drive repeat business. McClancy Seasoning brings an extensive product line, while customizing to the flavor and preparation size that fits their clients, not one-size-fits-all.

Custom blending and packaging capabilities are available from 10 grams to 2,000-pound tote bags for industrial applications so you can enjoy consistent production and right-on-time delivery.

McClancy offers exceptional R&D support for your product development, manufacturing operations and brand strategy.

R&D Categories
- New product development
- Line extensions
- Product enhancement
- Processing improvement
- Processing characteristic enhancement
- Shelf-life enhancement
- Co-packing opportunities

Our flavor engineers solve problems and create new opportunities for our valued clients every day. We work with you to create exciting and distinctive new flavors – and make sure those flavors can be reproduced efficiently and consistently every time.

For further information, contact:
McClancy Seasoning Co.
1 Spice Road
Fort Mill, SC 29715
800.843.1968 (phone)
803.548.2379 (fax)
www.mcclancy.com

2007 Supplier Profiles

MGP Ingredients, Inc.

Founded in 1941, MGP Ingredients, Inc. is a fully integrated producer of ingredients and distillery products. Ingredients primarily consist of specialty and commodity wheat proteins and starches for food and non-food applications. Distillery products consist of food grade alcohol and fuel grade alcohol. Through extensive research in protein and starch chemistry, MGPI continues to expand the depth and scope of its business. The company's scientists focus their expertise on developing highly functional ingredients that provide substantial benefits and advantages to customers and ultimately to the consumer.



MGP Ingredients, Inc. processes its products at plants located in Atchison, Kansas, where the company is headquartered, and in Pekin, Illinois. MGPI also operates a facility in Kansas City, Kansas for the further processing and extrusion of proteins and starches derived principally from wheat, and a facility in Onaga, Kansas for the manufacturing of wood composite resins and plant-based biopolymers.

MGP INGREDIENTS, INC.

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Steve Ham
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Atchison, KS 66002
800.255.0302
913.367.0192
sales@mgpingredients.com
www.mgpingredients.com

MicroThermics, Inc.

EXPERIENCE THE MICROTHERMICS DIFFERENCE! TECHNOLOGY, SERVICE, AND SUPPORT! We are experts in scaling up and down UHT, aseptic, pasteurization, and continuous cooking processes. Our Laboratory, Mini-Production & Pilot Processors simulate the whole process, not just the hold tube. The TECHNOLOGY behind our equipment enables researchers to get production quality results for Milk, Shakes, Soy Milk, Juices, Puddings, and more right in their lab or pilot plant.



The SERVICES we provide to our clients are second to none. We offer expert trainings, our Preventative Maintenance Program, same day shipment for most parts, and our extensive Miniature Plant Trial Services. The SUPPORT we provide to our clients is done by a trained staff specializing in processing. We provide technical advice for operation of the equipment, processing advice, and more! Come meet our staff and see our PLC Plate Heat exchanger system with on-board operational guide and data logging, laboratory steam injection, tubular, plate and microwave systems, in-line homogenizers, Ultra-Clean Fillers and more. EXPERIENCE THE MICROTHERMICS DIFFERENCE! IFT Booth 2313.

MicroThermics®

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Raleigh, NC 27615
Phone: 919-878-8045
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Email: info@microthermics.com
Website: www.microthermics.com

Newly Weds® Foods

All the Ingredients of a World Leader.

In the food processing and foodservice industries, Newly Weds® Foods is recognized as a premier global source for Customized Taste Technology. Whether you're developing products for retail or foodservice, you'll find our resources are one of a kind.



At Newly Weds® Foods, we use FlavorTrak℠, the most comprehensive menu-tracking database in the world, helping our customers stay on top of and ahead of emerging trends.

A classically trained Culinary Staff is another ingredient in the signature formulations Newly Weds® Foods creates. "Gold Standard" signature recipes set the benchmark for our Food Technologists, a group of formulation professionals uniquely skilled in food science.

You can count on Newly Weds® Foods' Technical Service Experts to be at your site for startups, technical assistance, troubleshooting or plant audits. Plus, we will conduct personalized seminars regarding our products and associated processes, free of charge, at your location or ours.

With 16 state-of-the-art plants and 12 regional laboratories, Newly Weds® Foods has the global reach to address any processors or foodservice operation's needs. Whether you need custom formulated seasonings, capsicums, marinades or breadings and batters, the food industry's #1 source for food coating solutions is Newly Weds® Foods.

NEWLY WEDS® FOODS
CUSTOMIZED TASTE TECHNOLOGY
1-800-621-7521

For further information, contact:
http://www.newlywedsfoods.com
or call 1-800-621-7521.

Ocean Nutrition Canada Limited

Ocean Nutrition Canada Limited (ONC) is a leading global supplier of MEG-3® brand Omega-3 EPA and DHA ingredients to the dietary supplement and healthy food ingredient markets. ONC has invested over eight years of dedicated research and development resources to create a breakthrough technology which enables food companies to create nutritionally dense foods using MEG-3® Omega-3, from fish oil…the best source of Omega-3.

Our innovative, and patented, Powder-loc™ microencapsulation technology enables the food industry to put fish oil based Omega-3 in a wide variety of foods such as baked goods, dairy, juice, and confectionary products.

MEG-3® Omega-3 healthy food ingredient is made using our patented Powder-loc™ microencapsulation technology. Our technology uses double shell protection, which keeps the EPA and DHA locked into the microcap while keeping the smell and taste of the fish locked out of the food.

MEG-3® , made with Powder-loc™ technology, benefits food manufacturers, food retailers, and consumers. Food manufacturers and food retailers benefit from being able to offer a value-added nutritional product to their consumers, resulting in a healthier bottom line. Consumers benefit from improved nutrition because they can conveniently get the goodness of fish, without the taste of fish, in foods they love to eat every day. That is why major multi-national brands are choosing MEG-3® as their trusted source of Omega-3 EPA/DHA from fish oil.

MEG-3®
trust the source®

POWDER LOC™

For further information, contact:
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Dartmouth, Nova Scotia
B2Y 4T6 Canada
902-480-3200
888-980-8889 (toll free)
www.ocean-nutrition.com
www.meg-3.com

2007 Supplier Profiles

Ocean Spray ITG

Ocean Spray ITG, IFT Chicago, July 29-31 2007, booth 3713

Ocean Spray's Ingredient Technology Group (ITG) is part of Ocean Spray Cranberries Inc, a grower-owned cooperative comprising 930 cranberry and citrus growers across America and Canada. Founded in 1930, the group satisfies 70 percent of the global demand for cranberries from its headquarters in Massachusetts and various North American production locations.



Ocean Spray's ITG is a product development resource for companies and organizations of all sizes. The group works as a strategic partner with customers, clients and food technologists to create customized recipes and increase market share through the application of technology.

The phenomenal success and growth of the cranberry can be attributed to Ocean Spray's dedication to helping manufacturers develop creative and highly appealing new product lines. Fifty years of research and experimentation have culminated in unparalleled knowledge and experience in new product development – from recipe formulation to market and ingredient analysis.

Ocean Spray's patented technologies have been used to create an extensive portfolio of fruit ingredients, which are available all year round for the bakery, confectionery, dairy, cereal, snack and nutraceutical industries.

For further information on how cranberries can be used in your products, please contact: Tom Jones, Tel: (508) 946 7606, Fax: (508) 946 4594
Email: tjones@oceanspray.com
Or visit: www.oceansprayitg.com and www.oceanspray.com

OmegaPure



OmegaPure® is North America's largest producer of long chain omega-3 fish oil. OmegaPure ingredients are highly refined and deodorized from menhaden, a herring-like fish. OmegaPure ingredients are a rich source of omega-3 long chain fatty acids, EPA and DHA; GRAS affirmed; and kosher certified. A single source and sustainable species, OmegaPure ingredients provide a clean label for food product packaging. OmegaPure ingredients perform well in many food products. Fortified products with OmegaPure ingredients include baked goods, sauces, spreads, dressings, desserts, and other food applications. Health professionals including the American Heart Association recommend long chain omega-3s for their heart health benefits. Additional research has shown benefits of omega-3s in cognition and eye health. OmegaPure is vertically integrated and manages the ingredients from harvest through processing by following guidelines of the Atlantic State Marine Fisheries Commission to ensure the menhaden population remains healthy and sustainable. OmegaPure's food scientists are ready to support your development of omega-3 fortified food products.

OmegaPure®
Healthy Products for a Healthy World®

For further information, contact:
OmegaPure
Address: 2101 CityWest Blvd., Bldg. 3, Ste. 500
Houston, TX 77042
Phone No.: 877-866-3423
Contact Name: Albert Riley
Fax No.: 713-940-6111
Email: inguire@omegapure.com
Web address: www.omegapure.com

P&G Food Ingredients

P&G Food Ingredients offers a full line of functional ingredients which allows formulators to create great tasting, better-for-you products with true benefits. P&G Food Ingredients taps into their company's expertise and capabilities to take corporate technology and expand it into customer brands. Their advances in lipid technology enable them to help provide customers healthy solutions.

Their offerings include:

- **Omegaphyl™ Omega-3 Fatty Acids** – concentrated EPA and DHA triglycerides with outstanding organoleptic properties
- **Nutraphyl® Phytosterols** – plant-derived sterols that are proven to lower blood cholesterol
- **Olean®** – a no-fat cooking oil with the full-fat flavor
- **Capriphyl™ MCTs** (in Europe only) – a readily available source of energy
- **Superol® Glycerin** – highly-versatile humectant and sweetener from the world's leading supplier

For more information about P&G Food Ingredients, visit our newly launched Web site at www.pgfoodingredients.com.

P&G Food Ingredients
Healthier choices, healthy lives.

Visit Their Booth (# 3816) at IFT

For further information, contact:
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Fax: 513-626-3145
E-mail: chemcialsinfo.im@pg.com
Web: www.pgfoodingredients.com

P.L. Thomas

P.L. Thomas – Where Food and Health Meet™
Booth 970

PLT will highlight specialty carrageenans and cutting-edge ingredients and botanicals for functional foods.



- **CEAMBLOOM™** high performance carrageenan gelatin replacement.
- **Kaneka Q10™** - the only self-affirmed GRAS Coenzyme Q10 and the only Q10 made through a natural yeast fermentation process. Manufactured in the US.
- **Phosphatidylserine (PS)** self-affirmed GRAS for improved cognitive health.
- **PomegranateP40*p*™**, rich with 40% punicosides and Kosher certified.
- **Tomat-O-Red ® natural red color made with lycopene.** Sample antioxidant-rich beverages, "Summer Delight", a fruit juice beverage, and "Tomato on the Go", a savory beverage.
- **MenaQ7™ Natural Vitamin K2** for healthy heart and bones.

Depend on PLT for your specialty ingredients needs.
IFT 2007 – PLT BOOTH 970
www.plthomas.com
paulan@plthomas.com
Paula Nürnberger
973-984-0900x214

plt p.l. thomas

2007 Supplier Profiles

Paul Mueller Company

Paul Mueller Company is your full service provider. Since our inception in 1940, we have evolved from a small-scale fabricator into a global process solution provider. Today, Mueller® is a certified ISO 9001:2000 company with nearly one million square feet of manufacturing space. Our products are used in over 100 countries in a wide variety of applications. We offer a full range of tanks/vessels from shop fabricated alloy vessels up through 20' in diameter to field fabricated vessels up through 2,000,000 gallons, but we do more than tanks — we provide process solutions. We offer integrated systems, modular fabrication, field construction, plant maintenance/repair, and complete turnkey project execution.



Your production plant is an integrated system that requires a broad range of disciplines to optimize. For over 65 years, Mueller has earned distinction for delivering outstanding equipment and unique solutions to the process industries, and we have the technical expertise, innovative engineering, and manufacturing resources to implement a process system specific to your needs. Let us provide your process solution!

For further information, contact:
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David Rowe, Regional Sales Manager
Paul Mueller Company
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Fax: (417) 575-9669
www.muel.com • E-mail: processing@muel.com

Pharmachem Laboratories Inc.



Pharmachem Laboratories, Inc., a leading developer and manufacturer of a variety of high-quality ingredients for the dietary supplement and food industries, introduces its newest ingredient for food and beverage products -- StarchLite®.

StarchLite, also known as Phase 2®, is an all-natural ingredient that has been shown in clinical studies to delay the digestion and absorption of carbohydrates; and reduce the Glycemic Index (GI) and caloric impact of starchy foods. Furthermore, StarchLite does not negatively affect the taste or texture of food.

A study commissioned by Pharmachem at UCLA's Geffen Center for Human Nutrition, under the direction of Dr. K. Udani, constructed recipes for baked goods including breads, tortillas and pizza crusts using the StarchLite ingredient. Sensory evaluations performed on those products by Tragon Corp., an independent research firm, showed that baked goods containing StarchLite compared favorably to traditional baked goods—and in some cases, were preferred over the traditional products.

StarchLite is self-affirmed GRAS, and can be formulated into a variety of food and beverage products, including cereals, frozen foods, packaged meals, calorie control snacks, pasta, pizza crust, soups and confectionary. The possibilities are endless!

Pharmachem has three processing and manufacturing facilities in Northern New Jersey. In addition, Pharmachem also owns American Ingredients, Anaheim, CA; Avoca, Inc., Merry Hill, NC; Avoca BioProcessing Corporation, Menomonee Falls, WI; and MPT, Inc., Paterson, NJ.

StarchLite®
Real food, less calories

For further information, contact:
Pharmachem Laboratories Inc.
Gregory Drew
gdrew@pharmachemlabs.com
265 Harrison Avenue
Kearny, NJ 07032
800-526-0609
www.starchlite.com

PURAC America



In your search for natural ingredients turn to PURAC America, a leading food ingredient company that specializes in the highest quality natural lactic acid, lactates and gluconates. PURAC's expertise in the food industry allows processors to utilize our highly skilled technical team to help strategically navigate successful new product introductions in the food and beverage industries. Food processors rely on PURAC to bring new ideas to their attention and to provide quality ingredients and stellar customer service. PURAC is focused on reducing your product development cycle to allow increased speed to market while decreasing your costs.

To help our customers utilize their time and resources more efficiently, PURAC introduces the "Creative Kitchen", a new food application center in Lincolnshire, IL. Designed to assist customers with innovation and the creative process during product development, the "Creative Kitchen" combines a passion for excellence with the technical expertise and in-depth knowledge of application essentials to help our customers. PURAC strives to continuously improve our customer satisfaction and to be the SOURCE YOU CAN DEPEND ON.

PURAC Ingredients Key Functions:
- Acidulant
- pH Regulation
- Shelf Life Extension
- Improved Food Safety
- Pathogen Control
- Flavor Enhancement
- Full Line of Mineral Enrichment

PURAC

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Lincolnshire, IL 60069
847.634.6330
IFT Booth #2513
Email: pam@purac.com
www.purac.com

Roquette America, Inc.

Roquette, a leading global manufacturer of healthy ingredients, provides Smart Calories™ innovative solutions that provide our customers with nutritionally balanced, great tasting choices for consumers. Smart Calories™ solutions deliver multiple health benefits including added fiber, enriched protein and reduced sugar. Roquette, will be showcasing NUTRALYS® natural pea protein, NUTRIOSE® soluble fiber, MALTISORB® crystalline maltitol, POLYSORB® FM fiber enhanced maltitol syrup. NUTRALYS® is a functional vegetable protein with outstanding nutritional benefits. MALTISORB® easily replaces sucrose, is low in calories and contributes to glycemic control. NUTRIOSE® soluble fiber can be used in confectionery and nutritional products. POLYSORB® FM is an advanced sugar replacement system offering indulgent taste with the benefits of added fiber, caloric and sugar reduction. Visit our booth to sample amazing and great tasting samples featuring our ingredients. Let our dedication to research and science, consumer market trends and our expertise in applications help you succeed!

ROQUETTE

For further information, contact:
Roquette America, Inc.
1-800-553-7035
www.maltitol-maltisorb.roquette.com

2007 Supplier Profiles

Sargento Food Ingredients



Marrying convenience and simplicity with great flavor, Sargento Food Ingredients has a unique way to bring sauce to your refrigerated products—Custom Melts™. Added to a meal kit or side dish, fresh tasting Custom Melts turn into sauces in minutes, making an ordinary dish, extraordinary.

Sargento Custom Melts™ are made using a patented technology that is totally customizable, so they deliver the form, flavor and functionality your application demands. With excellent cling, intense flavor and a cleaner dispensability than ready-made sauces, Custom Melts™ make saucing a dish simple. These high quality sauces come in just about any refrigerated form you can think of—shreds, dices, cubes or slices. Added to your product, Custom Melts™ turn into flavorful sauces within a few moments of heating.

A creamy and delicious addition to vegetables, side dishes or meal kits, Custom Melts™ are available in more than a dozen varieties including—Garlic-Herb, Sharp Cheddar, Alfredo, Pepper Jack, Creamy Pesto and Country Gravy.

SARGENTO®
Our Family's Passion is Cheese.™

To find out more about this revolutionary product, go to www.sargentofoodingredients.com and click on Custom Melts™ or contact:
Sargento
One Persnickety Place
Plymouth, WI 53073
800-795-7090
www.sargentofoodingredients.com

Seltzer Nutritional Technologies

Fortifying is our forte. Since 1981, Seltzer has built a reputation on service and quality with nutritional ingredients and custom micro-nutrient pre-mixes. Seltzer Nutritional Technologies provides formulation and ingredient expertise in combination with the quality and consistency of finished nutrient blends that our customers count on. From order date to ship date, our lead-time is the shortest in the industry. Looking for a basic RDI, Energy, Antioxidant, Recovery blend or an individual nutritional ingredient? Looking for ideas on how your product can be fortified for greater consumer appeal while retaining its good taste? Seltzer can provide the solution. Count on Seltzer for your nutrient and fortification needs.



SELTZER
NUTRITIONAL TECHNOLOGIES

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info@seltzernutritionaltech.com
www.seltzernutritionaltech.com

2007 Supplier Profiles

Sensient Food Colors



Sensient Food Colors Inc. is a division of Sensient Technologies Corporation, and the leading global manufacturer and marketer of colors for food and beverage products. We are able to solve formulation challenges – on your schedule – and in your time zone. We have 30 offices positioned across North America, Europe, Latin America and Asia-Pacific to serve you. Our international presence enables us to find multiple globalized solutions for troublesome innovation or optimization problems.

Only Sensient Food Colors has the ability to offer proprietary color technologies backed by a state-of-of-the-art Color Innovation Lab. Sensient offers a complete portfolio of color-based options from natural to synthetic to next-generation specialty colors.

In our labs, nature meets science and the result is color innovation. When you are in a race against time-to-market, or you just want to rejuvenate an existing product platform, you need choices. Nature and science provide them. Sensient helps deliver solutions to apply in your products. Call us today so we can partner with you to bring life to your new products.

SENSIENT

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Phone No: 314-889-7600
Fax No: 314-658-7314
Email: sfc@sensient-tech.com
Web: www.sensient-tech.com

Sethness Products Company

In business since 1880, Sethness Products Company is the world's leading manufacturer of Caramel Color. Used in virtually every segment of the food industry, Sethness Caramel Color applications include beverages, baked goods, sauces, soups, syrups, cereals, dry mixes and pet foods.



Available in both liquid and spray-dried powder specifications, Sethness Caramel Color offers application flexibility, versatility and economy. The product line includes more than 50 liquid and 20 powdered Caramel Colors. Sethness also offers 3 Caramelized Sugar Syrups, Non-GMO Caramel Colors, and Certified Organic Liquid Caramel Colors. A recent addition is OC234, the world's first commercially-available powdered Caramel Color.

OC234 is a label friendly, dry organic color that can improve the visual appeal of organic baked goods, cereals, dry blends, meat rubs, and seasonings. Sethness **will be displaying OC234 samples at booth #2655.**

Sethness operates the world's largest Caramel Color production facility in Clinton, Iowa, a plant in Ahmedabad, India and a plant in Merville, France. These strategically located operations allow Sethness to offer color solutions and service to food processors around the globe.

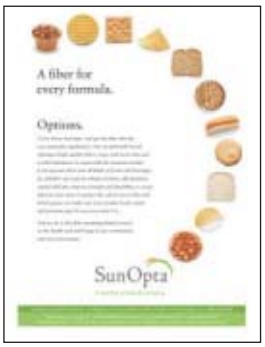
All the employees at Sethness Products Company are proud of their tradition of providing the highest quality Caramel Color for over 127 years.

SETHNESS CARAMEL COLOR

For further information, contact:
Sethness Products Company
3422 W. Touhy Avenue
Lincolnwood, Illinois 60712
Toll Free: 888.772.1880
mail@sethness.com
www.sethness.com

2007 Supplier Profiles

SunOpta Ingredients Group



Products: World's largest producer of Oat Fiber. Also offers Other Fibers (Soy/Organic), Stabilized Brans (Oat/Wheat/Corn), Stabilized Wheat Germ, Cellulose Gel, Ingredient Systems, Specialty Starches, Acid Whey, and Dry Sweeteners (Honey/Molasses). In addition we offer a broad range of Contract Manufacturing Services (Dry Blending, Evaporation, Fermentation, Grinding, Instantizing, Liquid Mixing & Processing, and Separation & Filtration).

Applications:
Fibers (Oat/Soy/Organic): Very versatile ingredients that can enhance food and beverage products by adding additional nutritional and functional benefits.
Stabilized Brans (Oat/Wheat/Corn): Extend pre-bake shelf life, reduce calorie content, enrich nutritional content.
Wheat Germ: Ideal for Whole Grain and Fiber enriched foods/beverages.
Ingredient Systems: Our specialty starches and stabilizers provide excellent functionality in dairy/non-dairy (soy, rice) based products.
Dry Sweeteners (Honey/Molasses): For various foods.
Grade A Acid Whey: Add acidic flavor notes in a cost effective whey form.
Cellulose Gel: Improve texture, mouth feel and freeze/thaw stability.
Contract Manufacturing: Please stop by to discuss our capabilities.

SunOpta
Ingredients Group

For further information, contact:
Customer Service
SunOpta Ingredients Group
25 Wiggins Avenue
Bedford, MA 01730
Toll Free: 1.800.353.6782
Tel: 1.781.276.5100
Fax: 1.781.276.5125
SOICustomerService@SunOpta.com
Website: www.sunopta.com

Symrise

Symrise – "Always inspiring more…"
People are coming to expect and demand more from all aspects of their lives. They are more aware of themselves, their lives, their relationships – and of the choices they have to get real satisfaction. They no longer want ideas, products or services that only work on one level or stimulate one sense – they want an 'and' in everything. Symrise translates these consumer insights, together with their customers, into successful products.



"Symrise – always inspiring more…" represents the unique combination of science and sensory perception that opens the door for consumers to encounter new worlds of experience, enjoyment and the senses.

In the future, the so-called "plus concepts" will play a major role in the Symrise product portfolio. With regards to the Flavors division, these include products such as flavors which not only taste good but also help to minimize the fat, sugar and salt in foods. Consumers are demanding healthier options, but they won't compromise on taste, and neither will we. In order to meet these consumer demands, Symrise is constantly developing new innovative product concepts for its customers, i.e. the new product range 'taste for life – making the tastes people love, healthier'.

symrise
always inspiring more...

For further information, contact:
Symrise GmbH & Co. KG
Mühlenfeldstr. 1
37603 Holzminden
Germany
Telephone: +49(0)5531/90-0
Fax: +49(0)5531/90-1649
Mail: flavorandnutrition@symrise.com
Internet: www.symrise.com

TABASCO® Brand Ingredients



TABASCO® Brand Ingredients will premiere a brand new booth for IFT in Chicago. Chef Jason Gronlund, manager of ingredients sales and culinary services, will be grilling steaks seasoned with TABASCO® Brand Dry Red Flavoring. The booth will also feature the perennially favorite cinnamon roll ice cream – the hot, cool, sweet and spicy sensation. Other foods to be served are co-branded products such as Hormel Hot & Spicy Chili, Vlasic Kosher Dill Spears, Slim Jim®, Dean's® Dips, Cheez-It® Crackers, and Heinz® Ketchup Kick'rs.

IFT attendees are invited to come by and register to win a gift basket valued at over $600 dollars.

There are 10 varieties of TABASCO® Brand Ingredients to help food processors put the unique flavor of TABASCO® Brand Pepper Sauce in their products. For details and more information, visit our website at www.TABASCOingredients.com

For further information, contact:
Jason R. Gronlund
Avery Island, LA 70513
Phone: 407-814-2488
Fax: 407-814-2489

Taiyo International

Taiyo is a leading manufacturer of functional ingredients for the food, beverage and supplement industries. Taiyo focuses on the development of innovative ingredients, derived from natural sources, to further develop the body's ability to protect and manage one's health. Products include Suntheanine® (a unique amino acid found in green tea which reduces stress without drowsiness), Sunphenon® (high-grade green tea catechins), Matcha Powder (natural green tea leaf powder high in polyphenols, vitamins, minerals and fibers), SunActive® Fe (a superdispersed iron having no gastrointestinal irritation, no unpleasant flavor, no change of color and superior bioavailability) and Sunfiber® (a water-soluble dietary fiber).

For further information, contact:
Taiyo International
5960 Golden Hills Drive
Minneapolis, Minnesota 55416
Tel: (763) 398-3003
Fax: (763) 398-3007
www.TaiyoKagaku.com

2007 Supplier Profiles

Tetra Pak Inc.

Tetra Pak protects what's good™.

Tetra Pak is focused on providing food and beverage manufacturers with customized, comprehensive processing and packaging solutions, including processing and filling equipment, plant automation and a large variety of packaging systems and secondary packaging solutions. This approach allows Tetra Pak to truly be the company that "protects what's good."

For more information, visit www.tetrapakusa.com.



For further information, contact:
Tetra Pak Inc.
101 Corporate Woods Parkway, Vernon Hills, IL 60061
Phone: (847) 955-6000
Fax: 847-955-6500
Contact: Giovanna Prestes
Email: giovanna.prestes@tetrapak.com
www.tetrapakusa.com

Tree Top, Inc.



Tree Top's mandate to its 1,700 grower-owners is to process their fruit into the highest quality, value-added products in the industry. Beyond premium apple juices, the company's ingredient group produces and sells a wide variety of bulk dried, chilled, frozen apple and frozen cherry products, as well as specialty juice concentrates. Tree Top is the world's largest supplier of dried apple products and is the primary supplier to the U.S. market, providing food ingredients to more than 20 of the nation's top 25 food companies.

Almost from the company's establishment in 1960, Tree Top has been an innovator in developing new consumer products and packaging. Frozen apple juice concentrate was developed first by Tree Top and sold under the same label. Today, the company remains dedicated to providing superior technical support capabilities. Tree Top's experienced scientists and food technologists are readily available to work with customers on the development of new products and unique applications.

Tree Top continues to develop multiple applications for its ingredients — particularly its low-moisture apples — in order to serve customers as they, in turn, strive to keep up with consumer demand for a greater variety of healthful cereals, snacks and baked goods.

For further information, contact:
Tree Top, Inc.
P.O. Box 248
220 E. Second Ave.
Selah, WA 98942-0248
Phone: 800-367-6571, Ext. 1435
Fax: 509-698-1409
www.treetop.com

U. S. Highbush Blueberry Council



Blue: the Color of Smart is the theme of this year's US Highbush Blueberry Council booth #2974. Foodsmart food technologists use real blueberries in a range of products from baked goods, fillings and toppings, to sauces, smoothies, frozen novelties, cereals and healthy snacks. Wise innovators use real fruit over simulated bits containing no fruit. Highbush blueberries provide the best that nature has to offer: good nutrients and delicious, sweet, real fruit with burst-in-the mouth flavor. Plus blueberries pair naturally with a variety of ingredients. Consumers consider real blueberries a value-added ingredient. Because real blueberries are homey and familiar, they give new products instant curb appeal. Easy-to-formulate, cultivated highbush blueberries are available year-round in multiple formats: fresh, frozen and dried; as purée, concentrate, and juice; from whole fruit to powder. Use real blueberries for product authenticity, luscious color, and real fruit benefits. Visitors to the U. S. Highbush Blueberry booth can sample blueberry-studded goodies and pick up a copy of our *Smart Blue Restaurant Guide* to blueberry-savvy Chicago eateries offering mouthwatering blueberry dishes on their menus. Be IFT Foodsmart. Make real blueberries your formulation choice for their fruity, true flavor, their bright, bold possibilities in product formulations, and their certain global appeal.

U. S. Highbush Blueberry Council, c/o Thomas J. Payne Market Development, 865 Woodside Way, San Mateo, CA 94401; phone (650) 340-8311; fax: (650) 548-2135; bberry@blueberry.org; www.blueberry.org



United Soybean Board



Soy's abundant supply, excellent nutritional profile and diversity of processed forms and applications make it a major ingredient in U.S. food manufacturing and foodservice.

Consumers seeking healthier food options often look to soy. According to a 2006 consumer research study, 82 percent of consumers agree that soy is healthy. In fact, soy foods and oils contribute a variety of health benefits to food products. Research shows soy may contribute to heart health, some women's health issues, and may reduce the risk of some cancers.

Enhanced trait soybean oils offer trans fat solutions for a variety of applications, in addition to other health and functionality benefits. Low-linolenic is the first of these enhanced-trait oils to be commercially available. Additional trait enhancements, including increased oleic, low-saturate, increased Omega-3 and high-stearic, are currently in the research pipeline. Food companies interested in purchasing or testing enhanced trait soybean oils should contact their processors today.

The United Soybean Board (USB) is proud to serve the U.S. food industry as a trusted resource for consumer and nutrition research; health and wellness information; innovative and on-trend recipe development; and as a resource for soy protein and oil experts.

USB, a farmer-led organization comprised of 64 farmer-directors, oversees the investments of soybean checkoff on behalf of all U.S. soybean growers.

USB
UNITED SOYBEAN BOARD
Making Your Checkoff Pay Off.

For further information, contact:
United Soybean Board
Adrienne Matthews
Marketing Communications
424 2nd Ave West
Seattle, WA 98109
PH: 206-270-4551
adrienne.matthews@publicis-pr.com
www.soyconnection.com
IFT Booth # 2717

2007 Supplier Profiles

Univar Food Ingredients

Start your next innovation with Univar. We have the portfolio of food ingredients and technical tools to simplify your research and development efforts. The Univar Food Function Library is a selection guide by function to broaden your ingredient options and provide the latest news in product features to meet the current trends in food formulation.

Univar has a technical sales team and distribution centers throughout North America to simplify your business. We are delivering FRESH IDEAS in food ingredients by offering products for the latest trends: SUGAR REDUCTION with Univar Aspartame and Sweetener Solutions LLC blended sweetener products and TEXTURE MODIFICATION with the unique line of hydrocolloids by CP Kelco. Our newest portfolio additions include GUM ACACIA from CNI, a leader in NATURAL SOLUBLE FIBER and a NEW UNIVAR FUNCTION LIBRARY TOOL for selecting Natural ingredients.

The Fresh Ideas start here!



fresh ideas
Univar Food Ingredients

For further information, contact:
Univar USA Inc.
17425 NE Union Hill Road
Redmond, WA 98052
www.univarusa.com
foodingredients@univarusa.com

Vegetable Juices, Inc.



Natural Ingredient Solutions™

For more than 70 years, Vegetable Juices, Inc. has been a leader in converting natural produce into flavorful, high value-added products for industrial food use. We are passionate about supplying quality ingredients that deliver outstanding fresh flavor and superior health benefits to our customers' products.

Convenience, nutrition and flavor are combined in Vegetable Juices, Inc., Natural Ingredient Solutions™. VJI will showcase two new product lines at IFT Food Expo 2007—Soft-Frozen Purees and Fire-Roasted Vegetable Purees.

Soft-Frozen Purees of herbs and vegetables are gently frozen for quick, easy use. The purees are produced using a proprietary freezing technology that makes them scoopable at a frozen temperature and lets them thaw four times as fast as hard-frozen products. The line consists of garlic, onion, lemongrass, roasted red pepper and ginger purees.

The Fire-Roasted Purees add authentic roasted notes and visual character to soups, sauces, salad dressings and more. Tomatoes, tomatillos, onions, bell peppers, eggplant and jalapenos are roasted over a direct fire that gives them a smoky flavor and aroma.

For further information, contact:
Vegetable Juices, Inc.
7400 S. Narragansett
Bedford Park, IL 60638
Phone: (708) 924-9500
Fax: (708) 924-9510
www.vegetablejuices.com
customerservice@vegetablejuices.com
IFT booth #2525

VJI NATURAL Ingredient SOLUTIONS Vegetable Juices, Inc.

Ventura Foods, LLC

Ventura Foods, LLC produces shortenings, oils, butter blends, margarines and spray releases. Our range of products include: flavored oils, liquid and solid fats, special functional needs products, No Trans products and customized formulations. We also offer a full line of dressings, sauces and mayonnaise to the food manufacturing sector. All of our products can be custom developed and designed to meet a wide array of functional needs. Products can be developed for shelf-stable, frozen or refrigerated applications.

We offer a diverse selection of packing options from: various portion cup sizes (round and rectangular), pouch packs in various sizes, 50 lb cubes to 2200 lb bulk totes, and some bulk tank trucks. We can also customize these packaging options for your specific needs. Along with our customized development, we can also offer logistical flexibility with our 12 manufacturing facilities in key geographical locations around the United States. Customizing products for your specific needs is what we do best.

Our current focus is reviewing our best options for No Trans products such as the unique source oils, types of fats and processes, solutions by applications, specialized processing to meet functional requirements, and creating a wide variety of liquid, pumpable (semi-fluid), and solid products for shortenings, oils, butter blends and margarines to meet customer needs and requirements. We have recently developed several products that meet the no trans qualification and have reduced saturated fats. All Ventura Foods, LLC plants are OU Kosher, follow GMP guidelines and our products are produced under strict good manufacturing practices. We also rely on independent outside firms such as Cook & Thurber, Silliker Labs, AIB and NFPA to audit our facilities.

For more information please contact us at 800-326-2253 or you can look at our Web site at www.venturafoods.com. We've got you covered from…Coast to Coast.

Ventura Foods, LLC

For further information, contact:
Ventura Foods, LLC
800.326.2253
www.venturafoods.com

Virginia Dare

Virginia Dare to Feature "Great Tastes of America" at 2007 IFT EXPO

Virginia Dare will offer a variety of exciting taste experiences from diverse regions of the United States under the theme "Great Tastes of America" at the 2007 IFT EXPO. Foods and beverages offered for sampling, demonstrating regional tastes, each created using Virginia Dare flavors or extracts, will be milk-based and soy-based smoothies, premium vanilla ice cream with a selection of sauces and toppings, and a delicious snack bar. A variety of flavored tea and fruit beverages will also enable visitors to experience how several different regional tastes can be incorporated into health and wellness products. Consumer research has been conducted to determine awareness and preference of various traditional regional flavors, foods and beverages from around the country. Results will be announced at the show. Live music each day will feature different traditional American music from various regions of America, to make the Virginia Dare booth an authentic American sensory experience.



VIRGINIA DARE
Think of us as Flavor

For further information, contact:
Paulette Kerner
pkerner@virginiadare.com
(410) 569-9766
Virginia Dare
882 Third Avenue
Brooklyn, NY 11232

2007 Supplier Profiles

Wacker Fine Chemicals

LOOKING FOR TOMORROW'S HEALTHY SOLUTIONS? THEY'RE HERE TODAY!



Consumers are demanding healthier food options. WACKER FINE CHEMICALS has the solutions you are looking for today.

WACKER FINE CHEMICALS is the global leader in cyclodextrin products derived from starch. All CAVAMAX® cyclodextrins are FDA notified GRAS.

WACKER FINE CHEMICALS has developed a new method for hardening fats and oils without changing their nutritional profile. The technology uses CAVAMAX® cyclodextrins to increase viscosity, but no chemical modification or reaction takes place. This new technology offers a healthy solution for replacing trans-fats without increasing saturated fats.

CAVAMAX® W6 is a new, colorless, natural dietary fiber with neutral taste, which is stable even in carbonated beverages. CAVAMAX® W6 significantly lowers the glycemic index of starch-containing food, and recent studies indicate CAVAMAX® W6 also increases the excretion of dietary fat.

CAVAMAX® CoQ10 is a clinically proven highly bioavailable Coenzyme Q10 powder that disperses easily into aqueous systems. CoQ10 is a vitamin-like substance present in every human cell and vital to energy production.

WACKER products also include complexes of flavors, antioxidants, dietary supplements and custom-tailored formulations. This pioneering technology is increasingly used for stabilization against heat, oxidation and taste or odor masking.

WACKER FINE CHEMICALS

For further information, contact:
Wacker Fine Chemicals
1-800-942-0628
1-517-264-8246
Ms. Nicole Tomba
3301 Sutton Road
Adrian, MI 49221
www.wacker.com

Wixon, Inc.

A Century of Flavors, Seasonings and Technology



For 100 years from concept to consumption, Wixon has offered high-quality food and beverage flavorings, seasonings, and spices. Wixon's technology and creativity formulate, flavor, blend, design, and package products at one location encompassing an R&D center, specialty food plant, and packaging plant.

Wixon's seasonings offer:
- Dry blends for batters, breading, gravies, and dairy

Wixon's Mag-nifique™ flavor modifiers:
- Improve common sensory problems
- Do not impact critical label claims or ingredient statements
- Make healthy food taste better
- Reduce off notes from high-intensity sweetness
- Suppress bitterness
- Combat excess saltiness
- Maximize flavor
- Low-usage levels

Wixon's Wix-Fresh™ protein products:
- Inhibit oxidation
- Reduce warmed-over flavor of pre-cooked meats
- Reduce off-notes associated with lactates and diacetates
- Mask iron, liver and metallic notes typically found in imported meats
- Enhance overall savory notes

KCLean™ Salt:
- Has half the sodium and all the flavor and texture of salt
- Allows "All natural flavors" and "No artificial flavors added" label claims
- Kosher available
- May be heated, frozen, boiled, packaged, and sprinkled

Discover the irresistible truth.
Call us at 800-841-5304 today for a FREE sample.
www.Wixon.com

For further information, contact:
Wixon, Inc.
1390 E. Bolivar Ave.
St. Francis, WI 53235
800-841-5304
414-769-3000
414-769-3024 fax
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The Food Source



www.foodsourceinc.com

BUYING POWER It's a simple business concept... improve your buying power and gain market share with The Food Source. Sourcing ingredients from The Food Source gives you the buying power to compete on a new level, because our high-volume purchasing power exceeds that of your competitors. Essentially, you are pooling your purchases with hundreds of other companies, thereby benefiting from greater buying power. The Food Source, Inc. Your distributor for Spices, Spice Blends, Dehydrated Vegetables, Milk, Whey, Dairy and Cheese Powders, All-Natural and N&A Flavors.

G. C. HAHN & Co.



http://www.gchahn.com

G. C. HAHN & Co. – manufacturer and global supplier of customized food stabilizer systems for nearly every food area. We provide you with great product ideas, customized product development and professional technology support. Well-known as a time and cost saver, we deliver robust solutions for even the most demanding stability profiles. G. C. HAHN & Co. USA, Inc., 10505 Corporate Drive, Suite 201, Pleasant Prairie, WI 53158. Office (262) 857 3527, Fax (262) 857 3078. info@gchahn.com.

HunterLab



www.hunterlab.com

We Make Measuring Color Easy For You
From inspection and grading of raw materials to monitoring color consistency of final product - HunterLab provides bench-top, portable and on-line color measurement systems for the food industry. Accurately measure the color of food products in solid, granular, flake, powder, paste and liquid form. Tel (703) 471-6870, info@hunterlab.com

Ingredient Solutions, Inc.



www.isinc.to

Ingredients Solutions, Inc. (ISI) is ***The World's Largest Independent Supplier of Carrageenan℠***. ISI provides complete technical support from our R&D center in Waldo, Maine. Our product line also includes Xanthan, Alginates and TextuRite™ texture systems. Stop by our IFT booth, #2122 to see demonstrations of the most significant hydrocolloid synergies and interactions and their practical applications in food. Ingredients Solutions, Inc. Main Office - R&D Center, 631 Moosehead Trail, Waldo, ME 04915. Tel: 207-722-4172 / Fax: 207-722-4271. Toll Free: 800-628-3166 info@isinc.to / www.isinc.to

J.R. Short



www.shortmill.com

J. R. Short Corn Flour & Meal Products Enhance a Variety of Applications.
CERATEX® Processed White Corn Flour is excellent in European-style breads and bases and is used to increase absorption. CERATEX® Yellow Corn Flour is a basic ingredient in batters and breadings. For more information call 800-544-8734 or visit www.shortmill.com.

Jungbunzlauer



www.jungbunzlauer.com

sub4salt helps to reduce sodium without compromising product quality. It is a new, patent-pending mineral salts blend which can reduce the sodium content by 25-50% while achieving identical taste profiles in final products.
Compared to other sodium reduction systems, sub4salt offers:
- similar sensory characteristics to NaCl
- no metallic KCl taste
- similar usage and handling to NaCl

For further information and application data please contact: Jungbunzlauer, John Hadley, john.hadley@jungbunzlauer.com, (617)614-0225

Milei



www.milei.de

Milei is dedicated to innovation and service. The Company is a leader in whey components technology and offers various whey and milk products/fractions tailor made to meet each customers needs. Milei is located in the Bavarian region of the German dairy industry and this location allows them to receive and process the freshest raw materials. (614) 764-1236, (614) 764-1216 (fax), Email: dsibrown@aol.com.

How do you drive traffic to your web site?

In the *Prepared Foods* Web Locator section!

Contact Christin Schrei @ (231) 487-0400 or schreic@bnpmedia.com for more information.

WILD Flavors, Inc.



www.wildflavors.com

WILD Flavors, Inc. delivers flavors, colors, ingredients and process technology to the food and beverage industries. Along with this expertise, WILD Flavors, Inc. is your one-stop-shop from concept development through raw material procurement to plant design and support, complete with packaging equipment. Find out what WILD can do for YOU! Visit www.wildflavors.com or call (859) 342-3600.



Prepared Foods' 2007

R&D Applications Seminar

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The **2007 R&D Applications Seminar** is a technical, "how to" event designed to help further educate bench-level R&D on practical solutions to specific application challenges. Join hundreds of your fellow formulators as they switch tracks to attend any of the 100 individual technical sessions.

Don't miss the new Applications Lab Track, which will feature the use of product samples to more effectively demonstrate an ingredient's functionality, or its application in a finished consumer product or model system.

Registration for 2007 is limited to 350 attendees to ensure an optimum learning environment. Bring the whole team and save with our Team Discount. Register at www.PreparedFoods.com/rd

Monday, Sept. 17, 2007: Applications Challenges

A complete list of presentations as of 6/15/07. Subject to change.

TRACK: FLAVORS & COLORS

8:30-9:10 a.m. **Natural Solution to Coloring Foods**
Speaker: Zohar Nir, VP NPD & Scientific Affairs, LycoRed Ltd. Beer-Sheva Israel

9:15-9:55 a.m. **Taste Matters when Creating Healthy Foods: Understanding How Taste Modifiers Work**
Speaker: Mariano Gascon, Flavor Lab Director, Wixon Inc.

TRACK: MEATS & MARINADES

1:00-1:40 p.m. **Choosing the Right Enzyme for Your Marinade/Tenderizing System**
Speaker: Peter Moodie, Director Sales & Marketing, Enzyme Development Corporation

1:45-2:25 p.m. **Use of Antimicrobials and Antioxidants in Food Products**
Speaker: David Grex, IsoStat Division, Technical Sales Manager, Newly Weds Foods Inc.

2:30-3:10 p.m. **Winning Sauces with Thermal Gelling Hydrocolloids**
Speaker: Mary Jean Cash, Senior Staff Scientist, Aqualon Division of Hercules Inc.

3:15-3:55 p.m. **Hydration of Water Soluble Polymers**
Speaker: Ross Clark, Distinguished Research Fellow, CP Kelco

TRACK: BAKED GOODS

8:30-9:10 a.m. **Chemical Leaveners in Bakery Applications**
Speaker: EB Russell, Technical Manager, Budenheim

9:15-9:55 a.m. **Flavoring Bakery Products**
Speaker: Agneta Weisz, Vice President Research & Development, Comax Flavors

10:30-11:10 a.m. **Naturally Stabilized Omega 3 Flax System**
Speaker: Mary Ekman, General Manager – USA, Pizzey's Milling USA

11:15-11:55 a.m. **Hitting a New Market: Delicious Vegan Baked Goods**
Speaker: Christine L. Garcia, Lead Counsel, The Animal Law Office

1:00-1:40 p.m. **Extending and/or Replacing Fruit with Flavored Particulates**
Speaker: Elaine Hoehn, Manager R&D, SensoryEffects (A PCI Food Ingredients Business)

1:45-2:25 p.m. **Enter the World of Sourdoughs**
Speaker: Christophe Dewilde, Business Development - Bakery Flavors, Puratos Corporation

2:30-3:10 p.m. **Use of Palm Oil in Baking and Food Service**
Speaker: Harold Kazier, Applications and Technical Services Manager, Loders Croklaan

3:15-3:55 p.m. **Innovative Methods for Lowering Saturates in Trans Free Shortenings**
Speaker: Ventura Foods

TRACK: STARCHES, GUMS & FIBER

8:30-9:10 a.m. **Functional Fibers for Grain Products**
Speaker: Jit Ang, EVP, Research & Development, International Fiber Corp.

9:15-9:55 a.m. **Nutritional and Functional Benefits of Soy Fiber in Various Food Systems**
Speaker: Melanie T. Dineen, Applications Technologist, SunOpta Ingredients Group

10:30-11:10 a.m. **Gum 101**
Speaker: Allen Freed, President/CEO, Gum Technology Corp.

11:15-11:55 p.m. **Modified Gum Acacia: A Potential Replacer for Gum Arabic and Modified Food Starch**
Speaker: Nabil Naouli, Principal Scientist, TIC Gums Inc.

TRACK: SPORTS & ENERGY DRINKS

1:00-1:40 p.m. **Fortifying Beverage Profits via Whey Protein Fortification**
Speaker: Starla Paulsen, Applications Department Manager, Glanbia Nutritionals

1:45-2:25 p.m. **Keep Going: Formulating Foods & Beverages for Sustained Energy**
Speaker: Marion Dalacker, Director, Market Strategies, WILD Flavors Inc.

2:30-3:10 p.m. **Nutritious and Delicious: Mineral Enhanced Beverages**
Speaker: Gale Walters, Account Manager, Food and Nutrition, PURAC America Inc.

3:15-3:55 p.m. **Creating Healthy Lifestyle Beverages**
Speaker: Tracy M. Mosteller, Team Manager - Frozen Desserts & Beverages, Danisco

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85% of 2006 R&D Attendees were extremely pleased with Seminar Session topics and the technical level of the presentations.

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Monday, Sept. 17, 2007: Applications Challenges

A complete list of presentations as of 6/15/07. Subject to change.

TRACK : ORGANIC, ALLERGEN-FREE & LABELING

8:30-9:10 a.m. **Food Labelling Challenges: A Global Perpsective**
Speaker: Jean Theiss, Director, Regulatory and Technical Information Systems, Newly Weds Foods Inc.

9:15-9:55 a.m. **The Latest on Vegan Marketing, Labeling and Liability**
Speaker: Christine L. Garcia, Lead Counsel, The Animal Law Office

10:30-11:10 a.m. **Better Gluten-Free Products Using Specialty Starch**
Speaker: Eric Shinsato, Technical Sales Support Manager, Corn Products International Inc.

11:15-11:55 a.m. **Organic Revolution: What It Really Means**
Speaker: Greg Bach, Director of Product Development, Synergy Flavors Inc.

TRACK: NEW EMERGING INGREDIENTS

1:00-1:40 p.m. **New Nutritional Ingredients for "Healthy Heart" and "Healthy Bones"**
Speaker: Rodger Jonas, National Business Development Manager, P.L. Thomas

1:45-2:25 p.m. **Hydrocolloid Synergies and their Practical Applications in Foods**
Speaker: Ingredient Solutions

2:30-3:10 p.m. **Exotic Tropical Fruits: New Applications**
Speaker: Tony Cantu, Senior R&D Technologist, iTi Tropicals Inc.

3:15-3:55 p.m. **Great Taste & Wellness**
Speaker: Puratos Corporation

TRACK: INGREDIENT SYSTEMS FOR WEIGHT MANAGEMENT PRODUCTS

8:30-9:10 a.m. **Innovative Solutions for Formulating Weight and Glycemic Management Products**
Speaker: Cristina Munteanu, Food Applications Specialist, GTC Nutrition

9:15-9:55 a.m. **New Research and Recipes for Reducing Starch Absorption**
Speaker: Kanak Udani, Consultant, and Gerard Viverito, Culinary Instructor, Pharmachem Laboratories Inc.

10:30-11:10 a.m. **Application of Insoluble, Refined Fibers in Weight Management Products**
Speaker: Jon Bodner, Senior Manager – Applications, J. Rettenmaier

11:15-11:55 a.m. **Slowly Digestible Carbohydrates (SDC) for Control Glycemic Index (GI) Foods**
Speaker: Sakharam K. Patil, President, S.K. Patil & Associates

TRACK: HEALTHFUL FORMULATIONS

1:00-1:40 p.m. **Correlating Nutrition and Health with Your Beverage Brand**
Speaker: Jessica Jones-Dille, Industry Trend Manager, WILD Flavors Inc.

1:45-2:25 p.m. **Formulating Functional Foods with Long Chain Omega-3s**
Speaker: Valerie Sanders, Food Applications Scientist, OmegaPure

2:30-3:10 p.m. **Functional and Nutritional: Egg Products Fit the Future of Formulation**
Speaker: Shelly McKee, Professor of Poultry Science, Auburn University and Marcia Greenblum, M.S., R.D., Director of Educational Outreach, Egg Nutrition Center, Washington, DC

3:15-3:55 p.m. **"Sugar-Free," "Reduced Sugar," and "No Sugar Added:" Expanding Beyond Confections**
Speaker: Peter Jamieson, Manager of Applications Research, SPI Polyols Inc.

TRACK: APPLICATION LABS

8:30-9:55 a.m. **Customizing Sensory Attributes via Hydrocolloids**
Speaker: CP Kelco

10:30-11:10 a.m. **"Meat" New Trends with Innovative Phosphates**
Speaker: Gene Brotsky, Sr. Technical Service Representative, Innophos Inc.

11:15-11:55 a.m. **Fortify Beverages "Clearly Better" with Calcium Phosphate**
Speaker: Amr Shaheed, Sr. Scientist II, Innophos

1:00-2:25 p.m. **Dried Plums: Natural Solution To Maintaining Shelf Life**
Speaker: James Degen and Jimmy Keeton, Consultants, Faculty Texas A&M University, California Dried Plum Board.

2:30-3:55 p.m. **Natural Colors in Beverages and Confections**
Speaker: GNT USA Inc.

Tuesday, Sept. 18, 2007: Applications Challenges

A complete list of presentations as of 6/15/07. Subject to change.

TRACK: PREPARED FOODS

8:30-9:10 a.m. **Industry Trends**
Speaker: Michael R. Buttshaw, National Sales and Marketing Manager, Hormel Specialty Products, Hormel Foods Corporation

9:15-9:55 a.m. **Yeast Extracts and Umami Taste - Tools for Sodium Reduction in Food**
Speaker: Otis Curtis, Business Development Manager, DSM Food Specialties, Inc. Savory Ingredients

10:30-11:10 a.m. **Prepared Meals Made Healthy by Fortifying with Omega-3**
Speaker: Sharon Spurvey, Director, Technical Services, Ocean Nutrition Canada

11:15-11:55 a.m. **Safe and Delicious: Natural Preservation Systems**
Speaker: Janet Payne, Business Development Manager, Food and Nutrition, PURAC America Inc.

TRACK: NEW EMERGING INGREDIENTS

1:00-1:40 p.m. **Designing Healthful Spray Dried Powdered Emulsified Systems**
Speaker: Joan Haselman, R&D Manager, Diehl Food Ingredients (A PCI Food Ingredients Division)

1:45-2:25 p.m. **Sodium Acid Sulfate**
Speaker: Carl Knueven, Corporate Manager - Product DevelopmentJones-Hamilton Co.

2:30-3:10 p.m. **Natural Ingredients for Preservation of Carotenoids and Related Ingredients**
Speaker: Rodger Jonas, National Business Development Manager, P.L. Thomas

TRACK: NUTRITIONAL BEVERAGES & FOODS

8:30-9:10 a.m. **Beverage Flavor Radar**
Speaker: Cara Newkirk, Senior Market Manager, FONA International Inc.

9:15-9:55 a.m. **Innovative Food and Beverage Fortification with Natural Tomato Lycopene**
Speaker: Zohar Nir, VP NPD & Scientific Affairs, LycoRed Ltd. Beer-Sheva Israel

10:30-11:10 a.m. **Overcoming Formulation Problems with Dissolved Calcium**
Speaker: Daniel Sortwell, Senior Food Scientist, Bartek Ingredients Inc.

11:15-11:55 a.m. **The Use of Dextrin Soluble Fiber in Healthy Confectionery Products**
Speaker: Tom Parady, Associate Program Coordinator, Food Applications, Roquette America Inc.

TRACK: FLAVORS & FLAVOR ENHANCEMENT

1:00-1:40 p.m. **Acidulant Taste and Flavor Effects**
Speaker: Daniel Sortwell, Senior Food Scientist, Bartek Ingredients Inc.

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Tuesday, Sept. 18, 2007: Applications Challenges

A complete list of presentations as of 6/15/07. Subject to change.

1:45-2:25 p.m. **Use of Dairy Flavors in Cost Optimization Projects**
Speaker: Marilyn Stieve, Dir of Marketing- Dairy Flavors and Priscilla Reeves, Product Development Manager- Dairy Flavors, Chr. Hansen

2:30-3:10 p.m. **Masking Flavors**
Speaker: Agneta Weisz, Vice President Research & Development, Comax Flavors

TRACK: DAIRY & FROZEN NOVELTY

8:30-9:10 a.m. **Stabilizing Dairy and Soy Drinks with Pectin and other Fruit Fibers**
Speaker: Frank Mattes, Sales Manager, Herbstreith & Fox Inc.

9:15-9:55 a.m. **High Protein Frozen Desserts: Extending the Nutritional Revolution to Frozen Desserts**
Speaker: Phil Rakes, Technical Specialist, Main Street Ingredients

10:30-11:10 a.m. **Reduction of Sugar and Calories in Cultured Dairy Products**
Speaker: Clement Opawumi, Senior Food Scientist, SPI Polyols Inc.

11:15-11:55 a.m. **Calcium Carbonate: Fortification & Functionality in Dairy and Non-Dairy Beverage and Frozen Dessert**
Speaker: Joann Foster, Technical Manager - Consumer Products, Specialty Minerals Inc.

TRACK: CONFECTIONERY, ICE CREAM & DESSERTS

1:00 – 1:40 p.m. **New Product Development Software for Specific Vertical Markets in the Food and Beverage Industries (Ice Cream/Dairy, Bakery, Beverages)**
Speaker: Ted Pliakos, Vice President-Sales, Advanced Software Designs

1:45-2:25 p.m. **Development of Sugar-Free Grained Mints Using Disaccharide Sugar Alcohols**
Speaker: Philippe Levresse, Project Coordinator - Technology / Applications Development, Roquette America Inc.

2:30-3:10 p.m. **Better for You Confectionery Fruit Snacks**
Speaker: Kate Jacobsen, Danisco Texturants & Sweeteners

TRACK: HEALTHFUL FORMULATIONS

8:30-9:10 a.m. **Formulating with Wheat Proteins**
Speaker: Brook Carson, Technical Product Manager, ADM Milling Co.

9:15-9:55 a.m. **Optimized Combinations of Fibers Used As Nutritional Stabilizers**
Speaker: Sebastien Baray, Technical Manager, Colloides Naturels Inc.

10:30-11:10 a.m. **Creating Customized Formulations for Improved Immune and Digestive Health Using Innovative Ingredient Solutions**
Speaker: Cristina Munteanu, Food Applications Specialist, GTC Nutrition

11:15-11:55 a.m. **Omega-3 Fortification of Products for Children and Women**
Speaker: John Foley, Technical Services, BASF Corporation

1:00-1:40 p.m. **The Functional Advantages of Nutritive Sweeteners and Juice Concentrates**
Speaker: David Ropa, VP Marketing, TJP Market Development

1:45-2:25 p.m. **Plan Your Oils Future Today: Formulating with Enhanced Soybean Oils**
Speaker: Richard Galloway, President, Galloway & Associates for United Soybean Board

2:30-3:10 p.m. **Magnesium and Potassium - Keys to Better Nutrition**
Speaker: Amr Shaheed, Sr. Scientist II, Innophos

TRACK: PRODUCT DEVELOPMENT ADVANCES

8:30-9:10 a.m. **Tools for Effective NPD - People, Products & Processes**
Speaker: Allan Samson, President, ESCA Enterprises Inc.

9:15-9:55 a.m. **Kids Say the Darndest Things! - Incorporating Kids in Product Development**
Speaker: Judy Lindsey, VP & General Manager, Product Dynamics, a division of RQA Inc.

10:30-11:10 a.m. **Research and Development Tax Credits: The Hidden Treasure**
Speaker: Terry Schwartz, Managing Director, RSM McGladrey Inc.

11:15-11:55 a.m. **Utilizing Workflow/Approval Routing to Facilitate the New Product Development Process**
Speaker: Ted Pliakos, Vice President-Sales, Advanced Software Designs

TRACK: BREAKFAST CEREALS, SNACKS & BARS

1:00-1:40 p.m. **Raising the Bar**
Speaker: Robert Hansen, Manager of Technical Services, Briess Malt & Ingredients

1:45-2:25 p.m. **Optimal Fortification with Calcium Carbonate**
Speaker: Joann Foster, Technical Manager - Consumer Products, Specialty Minerals Inc.

2:30-3:10 p.m. **Soy Protein Applications in Nutritional Beverages, Bars, and Snack Items**
Speaker: Lisa Bradford, Soy Foods Technologist II, Archer Daniels Midland Company

TRACK: APPLICATION LABS

8:30-9:55 a.m. **Formulating Foods with DHA Omega-3, the Vegetarian Source of DHA**
Speaker: Ruben Abril, Director, Ingredient Commericalization, Martek Biosciences

10:30-11:55 a.m. **Innovations in Dressings, Sauces & Dips**
Speaker: TIC Gums

1:00-2:25 p.m. **Changing Texture to Match Consumer Preferences**
Speaker: National Starch Food Innovation

2:30-3:55 p.m. **Innovative Solutions to Successfully Navigating Current Food Trends, Vegetable Juices**
Speaker: Vegetable Juices

Wednesday, Sept. 19, 2007: Application Labs

A complete list of presentations as of 6/15/07. Subject to change.

TRACK: APPLICATION LABS

8:00-9:15 a.m. **Flax - An Exciting Food Ingredient**
Speaker: Flax Canada 2015

8:00-9:15 a.m. **Raisin Functionality Around the World**
California Raisin Marketing Board

9:30-10:45 a.m. **Masking of Sweeteners in Beverage Applications**
Speaker: Jennifer B. Mei, Senior Scientist I-Flavor Analytical, Takasago International Corp.

9:30-10:45 a.m. **Yeast Extracts are Powerful Tools for Food Formulators: Improving Flavor Impact, Driving Product Preference, and Reducing Salt**
Speaker: Otis Curtis, Business Development Manager, DSM Food Specialties Inc., Savory Ing

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☐ **Individual Registration** **$650.00**

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Jennifer Bogdajewicz, Seminar Coordinator
***Prepared Foods'* R&D Applications Seminar**
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Cancellations must be in writing. Refunds will not be made for cancellations received after August 1, 2007. Alternate parties may be substituted at any time without penalty.

SPECIAL REQUIREMENTS

If you are physically challenged and/or have special meal requirements, please let us know. _____ _____

PART B: APPLICATIONS LAB SESSIONS

NEW

The Applications Lab sessions provide an interactive venue to further demonstrate an ingredient's functionality or its application in a finished product. **There is no additional charge to attend the Lab sessions**, however they are limited to 40 attendees per session, on a first-come, first-served basis. Please limit your choices to 3 Lab sessions per person on Monday, 3 on Tuesday and 2 on Wednesday.

I am registering for the following: (choose a maximum of 3 on Monday, 3 on Tuesday, and 2 on Wednesday)

MONDAY

☐ **8:30-9:55 a.m.**	Customizing Sensory Attributes via Hydrocolloids, CP Kelco
☐ **10:30-11:10 a.m.**	"Meat" New Trends with Innovative Phosphates, Innophos
☐ **11:15-11:55 a.m.**	Fortify Beverages "Clearly Better" with Calcium Phosphate, Innophos
☐ **1:00-2:25 p.m.**	Dried Plums...Naturally Extending Food Product Shelf Life, California Dried Plum
☐ **2:30-3:55 p.m.**	Natural Colors in Beverages and Confections, GNT USA, Inc.

TUEDSAY

☐ **8:30-9:55 a.m.**	Formulating Foods with Life's Omega-3, the Vegetarian Source of DHA, Martek
☐ **10:30-11:55 a.m.**	Innovations in Dressings, Sauces & Dips, TIC Gums
☐ **1:00-2:25 p.m.**	Changing Texture to Match Consumer Preferences, National Starch Food Innovation
☐ **2:30-3:55 p.m.**	Innovative Solutions to Successfully Navigating Current Food Trends, Vegetable Juices

WEDNESDAY

☐ **8:00-9:15 a.m.**	Flax - An Exciting Food Ingredient, Flax Canada 2015
☐ **8:00-9:15 a.m.**	Raisin Functionality Around the World, California Raisin Marketing
☐ **9:30-10:45 a.m.**	Masking of Sweeteners in Beverage Applications, Takasago
☐ **9:30-10:45 a.m.**	DSM Yeast Extract Based Process Flavors - Tools for Building a Great Taste, DSM, Food Specialties USA, Inc.

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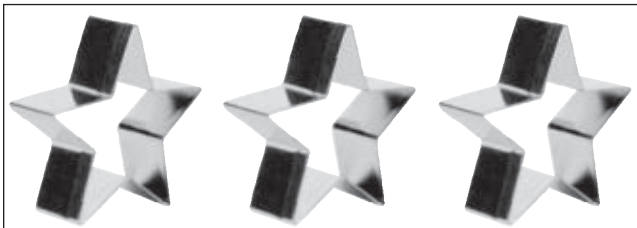
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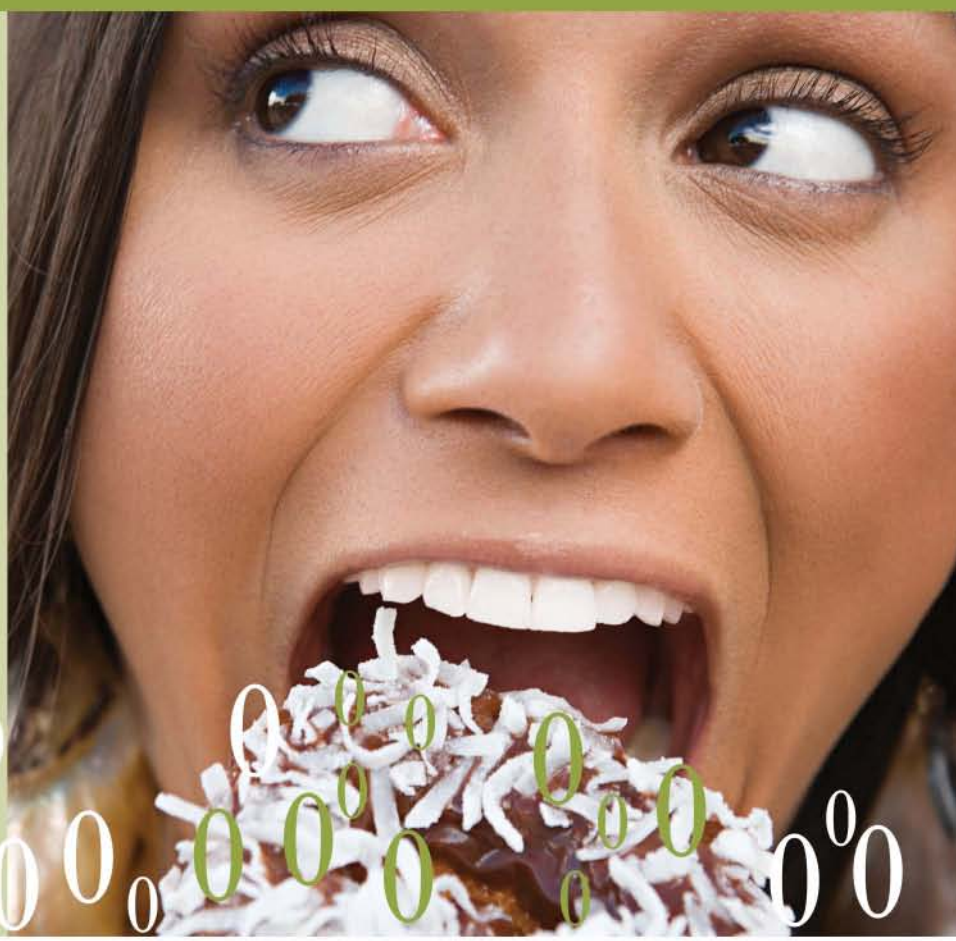
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